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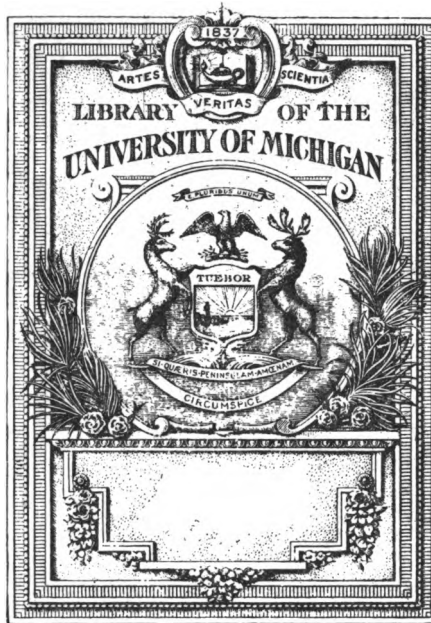
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PROCEEDINGS  
OF  
AMERICAN CONFERENCE  
OF  
PHARMACEUTICAL FACULTIES

1919



THE GIFT OF  
*Dr. Henry Kraemer*

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AMERICAN CONFERENCE  
OF  
PHARMACEUTICAL FACULTIES



**Proceedings**  
of the  
**Twentieth Annual Meeting**

NEW YORK CITY  
AUGUST TWENTY-FIFTH AND TWENTY-SIXTH  
NINETEEN NINETEEN

4

INSTITUTIONS HOLDING MEMBERSHIP IN  
THE AMERICAN CONFERENCE OF  
PHARMACEUTICAL FACULTIES

*Alabama.*

Alabama Polytechnic Institute, Department of Pharmacy,  
Auburn; Lynn S. Blake, Dean.

*California.*

University of California, California College of Pharmacy, San  
Francisco; Franklin T. Green, Dean.

University of Southern California, College of Pharmacy, Los  
Angeles; Laird J. Stabler, Dean.

*District of Columbia.*

George Washington University, National College of Pharmacy,  
Washington; Henry E. Kalusowski, Dean.

*Illinois.*

University of Illinois, School of Pharmacy, Chicago; William B.  
Day, Dean.

*Indiana.*

University of Notre Dame, School of Pharmacy, Notre Dame;  
Robert L. Green, Dean.

Purdue University, School of Pharmacy, Lafayette; Charles B.  
Jordan, Director.

*Iowa.*

Highland Park College of Pharmacy and Chemistry, Des Moines;  
Elbert O. Kagy, Dean.

State University of Iowa, College of Pharmacy, Iowa City;  
Wilber J. Teeters, Dean.

*Kansas.*

University of Kansas, School of Pharmacy, Lawrence; Lucius  
E. Sayre, Dean.

*Kentucky.*

Louisville College of Pharmacy, Louisville; Oscar C. Dilly, Dean.

*Louisiana.*

Tulane University of Louisiana, School of Pharmacy, New Orleans; Isadore Dyer, Dean.

*Maryland.*

University of Maryland, Department of Pharmacy, Baltimore; Evander F. Kelly, Dean.

*Massachusetts.*

Massachusetts College of Pharmacy, Boston; Theodore J. Bradley, Dean.

*Michigan.*

University of Michigan, College of Pharmacy, Ann Arbor; Henry Kraemer, Dean.

*Minnesota.*

University of Minnesota, College of Pharmacy, Minneapolis; Frederick J. Wulling, Dean.

*Mississippi.*

University of Mississippi, Department of Pharmacy, Oxford; Henry M. Faser, Dean.

*Missouri.*

St. Louis College of Pharmacy, St. Louis; Henry M. Whelpley, Dean.

*Montana.*

University of Montana, School of Pharmacy, Missoula; Charles E. Mollet, Dean.

*Nebraska.*

University of Nebraska, College of Pharmacy, Lincoln; Rufus A. Lyman, Dean.  
Creighton College of Pharmacy, Omaha; Howard C. Newton, Dean.

*New York.*

Brooklyn College of Pharmacy, Brooklyn; William C. Anderson, Dean.

University of Buffalo, Buffalo College of Pharmacy, Buffalo;  
Willis G. Gregory, Dean.

Columbia University, College of Pharmacy of the City of New  
York, New York; Henry H. Rusby, Dean.

Fordham University, College of Pharmacy, New York; Jacob  
Diner, Dean.

Union University, Albany College of Pharmacy, Albany; William  
Mansfield, Dean.

*North Carolina.*

University of North Carolina, School of Pharmacy, Chapel Hill;  
Edward V. Howell, Dean.

*Ohio.*

Western Reserve University, Cleveland School of Pharmacy,  
Cleveland; Edward Spease, Dean.

Ohio State University, College of Pharmacy, Columbus; Clair  
A. Dye, Acting Dean.

*Oklahoma.*

State University of Oklahoma, School of Pharmacy, Norman;  
Howard S. Browne, Dean.

*Oregon.*

North Pacific College, School of Pharmacy, Portland; Herbert C.  
Miller, President.

Oregon Agricultural College, School of Pharmacy, Corvallis;  
Adolph Ziefle, Dean.

*Pennsylvania.*

University of Pittsburgh, Pittsburgh College of Pharmacy, Pitts-  
burgh; Julius A. Koch, Dean.

Philadelphia College of Pharmacy, Philadelphia; Charles H.  
La Wall, Dean.

*Philippines.*

University of the Philippines, School of Pharmacy, Manila;  
M. V. del Rosaris, Director.

*South Carolina.*

Medical College of the State of South Carolina, College of  
Pharmacy, Charleston; Robert Wilson, Jr., Dean.

*South Dakota.*

South Dakota State College of Agriculture and Mechanic Arts,  
Department of Pharmacy, Brookings; E. R. Series, Dean.

*Tennessee.*

Meharry Pharmaceutical College, Nashville; George W. Hubbard, President.

University of Tennessee, School of Pharmacy, Memphis; Herbert T. Brooks, Dean.

Vanderbilt University, School of Pharmacy, Nashville; Edsel A. Ruddiman, Dean.

*Texas.*

Baylor University, School of Pharmacy, Dallas; E. H. Cary, Acting Dean.

*Virginia.*

Medical College of Virginia, School of Pharmacy, Richmond; Wortley F. Rudd, Acting Dean.

*Washington.*

State College of Washington, School of Pharmacy, Pullman; P. H. Dirstine, Principal.

University of Washington, College of Pharmacy, Seattle; Charles W. Johnson, Dean.

*Wisconsin.*

University of Wisconsin, Course in Pharmacy, Madison; Edward Kremers, Director.

## PAST OFFICERS OF THE CONFERENCE

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### PRESIDENTS

A. B. Prescott*.....1900-01	W. M. Searby*.....1909-10
J. P. Remington*.....1901-02	J. O. Schlotterbeck*.....1910-12
Edward Kremers.....1902-03	A. H. Clark.....1912-13
H. H. Rusby.....1903-04	Albert Schneider.....1913-14
G. B. Kauffman.....1904-05	F. J. Wullng.....1914-15
H. M. Whelpley.....1905-06	H. V. Army.....1915-16
J. H. Beal.....1906-07	R. A. Lyman.....1916-17
J. T. McGill.....1907-08	Henry Kraemer.....1917-18
H. P. Hynson.....1908-09	C. B. Jordan.....1918-19

### VICE-PRESIDENTS

J. P. Remington*.....1900-01	W. J. Teeters.....1910-11
Edward Kremers.....1901-02	A. H. Clark.....1911-12
H. H. Rusby.....1902-03	Albert Schneider.....1912-13
G. B. Kauffman.....1903-04	E. A. Ruddiman.....1913-14
C. Lewis Diehl*.....1904-06	H. V. Army.....1914-15
J. T. McGill.....1906-07	R. A. Lyman.....1915-16
C. B. Lowe.....1907-08	T. J. Bradley.....1916-17
A. B. Stevens.....1908-09	C. E. Caspari.....1917-18
E. H. LaPierre.....1909-10	William Mansfield.....1918-19

### SECRETARY-TREASURERS

W. H. Bradbury.....1900-01	G. C. Diekman.....1908-10
W. L. Scoville.....1901-04	C. W. Johnson.....1910-13
J. O. Schlotterbeck*.....1904-08	W. J. Teeters.....1913-17

### CHAIRMEN OF EXECUTIVE COMMITTEE

J. H. Beal.....1900-03	W. A. Puckner.....1905-08
H. M. Whelpley.....1903-05	J. A. Koch.....1908-10

\* Deceased.

## OFFICERS AND ELECTIVE COMMITTEES, 1919-1920

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### PRESIDENT

WORTLEY F. RUDD . . . . . *Richmond, Va.*

### VICE-PRESIDENT

JULIUS A. KOCH . . . . . *Pittsburgh, Pa.*

### SECRETARY-TREASURER

THEODORE J. BRADLEY . . . . . *Boston, Mass.*

### EXECUTIVE COMMITTEE

HENRY KRAEMER, *Chairman*.....1920.....*Ann Arbor, Mich.*  
HENRY V. ARNY.....1920.....*New York, N. Y.*  
RUFUS A. LYMAN.....1920.....*Lincoln, Neb.*  
CHARLES B. JORDAN.....1921.....*Lafayette, Ind.*  
JULIUS W. STURMER.....1921.....*Philadelphia, Pa.*

### SYLLABUS COMMITTEE

WILLIAM C. ANDERSON.....1920.....*Brooklyn, N. Y.*  
JULIUS A. KOCH.....1921.....*Pittsburgh, Pa.*  
THEODORE J. BRADLEY.....1922.....*Boston, Mass.*  
CLYDE M. SNOW.....1923.....*Chicago, Ill.*  
ALBERT BOLENBAUGH.....1924.....*Richmond, Va.*  
EDEL A. RUDDIMAN.....1925.....*Nashville, Tenn.*  
E. FULLETON COOK.....1926.....*Philadelphia, Pa.*

## STANDING COMMITTEES FOR 1919-1920

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**No. 1. COMMITTEE ON HIGHER EDUCATIONAL STANDARDS**

W. J. Teeters, Chairman; E. A. Ruddiman, E. O. Kagy, C. E. Mollet, E. F. Kelly.

**No. 2. COMMITTEE ON FACULTIES**

Zada M. Cooper, Chairman; Edward Spease, H. W. Youngken, C. E. Caspari, A. H. Clark.

**No. 3. COMMITTEE ON CURRICULUM AND TEACHING METHODS**

C. B. Jordan, Chairman; H. V. Arny, H. H. Rusby, E. N. Gathercoal, J. W. Sturmer.

**No. 4. COMMITTEE ON ACTIVITIES OF STUDENTS AND ALUMNI**

R. A. Lyman, Chairman; H. M. Whelpley, Zada M. Cooper, G. C. Diekman, F. P. Stroup, L. D. Havenhill, C. C. Glover.

**No. 5. COMMITTEE ON UNIFORM COLLEGE BULLETINS**

C. O. Lee, Chairman; Jeannot Hostman, Adolph Ziefle, A. W. Linton, H. C. Newton.

**No. 6. COMMITTEE ON RELATIONS OF PHARMACY SCHOOLS AND OTHER PROFESSIONAL SCHOOLS**

E. F. Kelly, Chairman; C. H. La Wall, W. G. Crockett, W. G. Gregory, A. F. Schlichting.

**No. 7. COMMITTEE ON RELATIONS OF THE COLLEGES WITH THE BOARDS**

J. G. Beard, Chairman; Albert Schneider, C. P. Wimmer, P. F. Fackenthal.

**No. 8. COMMITTEE ON EXAMINATION QUESTIONS**

E. A. Ruddiman, Chairman; E. D. Davy, Daniel Base, C. W. Johnson, J. G. Beard.

**No. 9. COMMITTEE ON RESEARCH**

Albert Schneider, Chairman; H. V. Arny, Edward Kremers, W. H. Ziegler, Henry Kraemer.

## PLACES OF MEETINGS

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1. Richmond, Va., May 8-10, 1900.
2. St. Louis, Mo., September 19-20, 1901.
3. Philadelphia, Pa., September 12-15, 1902.
4. Mackinac Island, Mich., August 3-5, 1903.
5. Kansas City, Mo., September 7-8, 1904.
6. Atlantic City, N. J., September 5-7, 1905.
7. Indianapolis, Ind., September 5-6, 1906.
8. New York, N. Y., September 4-5, 1907.
9. Hot Springs, Ark., September 8-10, 1908.
10. Los Angeles, Cal., August 17-18, 1909.
11. Richmond, Va., May 4-5, 1910.
12. Boston, Mass., August 16-17, 1911.
13. Denver, Colo., August 20-22, 1912.
14. Nashville, Tenn., August 20-21, 1913.
15. Detroit, Mich., August 25-26, 1914.
16. San Francisco, Cal., August 6-7, 1915.
17. Philadelphia, Pa., September 1-2, 1916.
18. Indianapolis, Ind., August 27-28, 1917.
19. Chicago, Ill., August 12-13, 1918.
20. New York, N. Y., August 25-26, 1919.

**PROCEEDINGS**  
**OF THE**  
**TWENTIETH ANNUAL MEETING**  
**OF THE**  
**AMERICAN CONFERENCE OF**  
**PHARMACEUTICAL FACULTIES**

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**FIRST SESSION—MONDAY AFTERNOON, AUGUST 25, 1919**

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The Twentieth Annual Meeting of the American Conference of Pharmaceutical Faculties was called to order by President Jordan, of Indiana, in Parlor B, Hotel Pennsylvania, New York City, at 2 o'clock, August 25, 1919.

The President stated that the first order of business was the roll call. The Secretary asked for a full and complete response to the roll call, as the Conference desired an accurate list of the attendance and of the colleges represented, the credentials sent to the Executive Committee being very often incorrect; he stated that the register was in charge of Dr. Dye, who would endeavor to see that every delegate present signed it, so that each list could be modified and revised by the other, and thus a true record obtained of the colleges represented and delegates present.

The Secretary thereupon proceeded to call the roll of the schools holding membership in the Conference, and the following duly accredited delegates were found to be in attendance.

University of Southern California, College of Pharmacy

Laird J. Stabler

George Washington University, National College of Pharmacy

Lyman F. Kebler

University of Illinois, School of Pharmacy

William B. Day

Clyde M. Snow

Albert H. Clark

Edmund N. Gathercoal

Purdue University, School of Pharmacy  
     Charles O. Lee  
     Charles B. Jordan  
 Highland Park College of Pharmacy  
     Elbert O. Kagy  
 State University of Iowa, College of Pharmacy  
     Zada M. Cooper  
     Wilber J. Teeters  
 University of Kansas, School of Pharmacy  
     Lucius E. Sayre  
 University of Maryland, Department of Pharmacy  
     Daniel Base  
     E. Frank Kelly  
 Massachusetts College of Pharmacy  
     Theodore J. Bradley  
     Elie H. La Pierre  
 University of Michigan, College of Pharmacy  
     Henry Kraemer  
 University of Minnesota, College of Pharmacy  
     Edwin L. Newcomb  
 St. Louis College of Pharmacy  
     Charles E. Caspari  
     Henry M. Whelpley  
     Frederick W. Sultan  
 Creighton College of Pharmacy  
     Vincent J. Fitz-Simon  
 University of Nebraska, College of Pharmacy  
     Rufus A. Lyman  
 Brooklyn College of Pharmacy  
     William C. Anderson  
     Jacob H. Rehfuess  
     Joseph L. Mayer  
 University of Buffalo, Buffalo College of Pharmacy  
     Willis G. Gregory  
 Columbia University, College of Pharmacy of the City of New  
     York  
     Henry V. Arny  
     George C. Diekmann  
     Henry H. Rusby

Fordham University, College of Pharmacy  
     Jacob Diner  
     Gustave Horstman  
     George Hohmann  
 Ohio State University, College of Pharmacy  
     Clair A. Dye  
 Western Reserve University, Cleveland School of Pharmacy  
     Edward Spease  
 State University of Oklahoma, School of Pharmacy  
     C. V. Nichols  
 Oregon Agricultural College, School of Pharmacy  
     M. J. Seeley  
 Philadelphia College of Pharmacy  
     Charles H. La Wall  
     Julius W. Sturmer  
     E. Fullerton Cook  
 University of Pittsburg, Pittsburg College of Pharmacy  
     Julius A. Koch  
 Medical College of the State of South Carolina, College of  
     Pharmacy  
     Washington H. Zeigler  
 Vanderbilt University, School of Pharmacy  
     Edsel A. Ruddiman  
 Baylor University, School of Pharmacy  
     W. G. Crockett  
 Medical College of Virginia, School of Pharmacy  
     Wortley F. Rudd  
 University of Washington, College of Pharmacy  
     Charles W. Johnson  
 University of Wisconsin, Course in Pharmacy  
     Edward Kremers

In the absence of Vice-President Mansfield, Charles E. Caspart took the chair during the reading of the President's Address.

#### ADDRESS OF THE PRESIDENT

By Charles B. Jordan

The last two annual meetings of the American Conference of Pharmaceutical Faculties were held during the trying times of war.

and the gloom of that great conflict hung continually over us and much of our time, thought, and energy were given to the problems arising from it. At our last meeting, in particular, we were cognizant of the effects produced by the war. In fact, we were uncertain whether there would be any colleges of pharmacy during the remainder of the war, and little or no definite information was obtainable at that time. Thanks to an All-Wise Providence, we have passed out of that gloom and are again in the sunshine of peace. Our colleges have returned to a peace-time footing, and we can, in this meeting, take up our varied peace-time problems and give them careful consideration.

The war has taught us many valuable lessons, and the greatest of these is that the rendering of service and the subjection of self are two of the greatest attributes of mankind. Today we measure a man, not by what he possesses nor by his powerful mental attributes, but by what service he can and is willing to render to the community. Service is the motto of all well-meaning persons and organizations. This is well illustrated by the service rendered by our soldier and sailor boys, by our noble women at home and abroad, by the Red Cross, by the Y. M. C. A., by the K. C., by the Salvation Army, and other organizations. The Church has caught the spirit and is endeavoring to give its best service. We have an awakening of community service to the state, etc. All of this service is given freely and without thought of selfish gain. The giving of service and repression of selfishness is the great watchword of the hour. We should be lacking in patriotic duty did we not catch something of the meaning of this new spirit, and apply it in our considerations at this annual meeting. I know that the pharmaceutical educators have caught that spirit and have come here to render their best service to our profession, and that selfishness and selfish motives will be left out of our deliberations. Not how much can I do for myself, but how much can I do for my profession is, I am sure, the spirit that will pervade us in our work.

The American Conference of Pharmaceutical Faculties had its inception in the meeting of a few pharmaceutical educators at the annual meeting of the A. Ph. A. in May of 1900. This small gathering of enthusiastic teachers of Pharmacy, who met for the purpose of forming an organization "to promote the interests of pharmaceutical education," has been designated the First Annual Meeting of the American Conference of Pharmaceutical Faculties, hence this is the

twentieth annual meeting of the Conference. It is well in the life of organizations, as in the life of individuals, that, at intervals, some time be spent in consideration of what has been accomplished and of what has not been accomplished. I deem it fitting that we, on this our twentieth birthday, review our formative period and note what progress we have made and wherein we have failed. This review will be brief and will touch only the important facts.

In its earlier meetings the Conference concerned itself with organization, securing publicity, effecting closer relationships with State Boards of Pharmacy, increasing membership, etc. We all appreciate today how well we have accomplished these purposes. As a result of these earlier efforts we have a most effective organization that wields considerable influence in pharmaceutical affairs, especially of an educational nature, and one that receives recognition in practically all states. We have also secured closer relationships with the National Association of Boards of Pharmacy and we find the A. C. P. F. and the N. A. B. P. working hand in hand for better pharmacy. There were seventeen charter members of the Conference. This number increased rapidly at first, but, with the adoption of definite and higher requirements for membership, the increase has been slow. The membership is now 46, and includes most, though not all, of the reputable colleges of pharmacy. I believe that we could strengthen our position by taking in all colleges that can and do meet our requirements for membership. There was a time when it was said that some reputable colleges held aloof from membership because the Conference was composed of a handful of good, bad, and indifferent colleges. If this were ever true, the time has passed and membership is attractive to all reputable colleges and I hope that all will soon be within the fold. These things which we have tried to do and have done need no attention except brief mention, that we may renew our courage and attack again the problems left unsolved. The things we have tried to do and failed to accomplish, or have only partly accomplished, need our most careful consideration and our best judgment. They are all timeworn, but as long as they remain unsolved we shall have failed in our duty, therefore we should attack them with a new vigor. They need more time for deliberation, and I prefer to take them up later when more time can be given to them.

#### DEATH OF MEMBER

During the year American Pharmacy and the American Conference of Pharmaceutical Faculties have lost a strong, earnest, and

enthusiastic supporter. Professor James M. Good died in St. Louis, May 15th, 1919. During the earlier history of the Conference, Prof. Good took an important part in its work and rendered valuable services on committees and in open discussion. The Conference owes a debt of gratitude to Prof. Good for this work and I am glad at this time to testify to the high regard in which he has always been held. I am pleased that the Conference takes cognizance of its deceased members and publishes an obituary together with a photograph. Later in the session, close friends of Prof. Good will be given an opportunity to express their appreciation of his life and work.

#### FINANCIAL CONDITION

My attention was drawn to our financial condition by the report of the Secretary-Treasurer to the effect that he doubted that we should be able to pay the expenses of representatives to certain associations. I have gone over the Treasurers' reports since August 25th, 1914, and find the following:

During the year 1914-1915, the total amount received was \$552.00 and of this \$187.67 was not expended. In 1915-1916 the total receipts were \$576.00, and yet we had a deficit of \$54.33. In 1916-1917 the total receipts were \$516.00 with a deficit of \$116.53. In 1917-1918 the total receipts were \$742.50 yet we had a deficit of \$118.53.

I have not learned our financial condition for this year, but we have deficits for the last three years aggregating \$289.39. We had a balance on hand July 31st, 1918, of \$1,057.33, and at our present rate of increasing deficit, this sum would all be expended in a short time. With the increased cost of paper and publication, I anticipate that this deficit will increase more rapidly than it has increased in the last three years. If this be true, we shall soon be bankrupt. The annual dues of the Conference are \$10.00. This is indeed a very small sum and membership in the Conference is worth much more than this to any college, even in a financial way. The annual membership fee for the Association of Agricultural Colleges is thirty-five dollars, a figure that more nearly meets the demands made upon our Treasurer. The high cost of material and of labor is bound to increase our cost of doing business and we should make adequate provisions for such increased cost. The work of our committees often involves the expenditure of funds and many times this expense is met by members of the committee. The expenses of the President's office would be much greater, if the institutions with which the Presidents have been con-

nected did not supply a stenographer for the work. I believe we should accept such stenographic services, if the institutions care to supply them, but the time may come when this cannot be done. I am convinced that our annual dues should be increased to meet our increasing deficit and our increased cost of doing business, therefore,

I. I recommend that the annual dues be increased to \$20.00.

#### FINANCES OF COMMITTEES

Our committees often spend considerable sums in pursuing their legitimate work, and committees are sometimes embarrassed in their work because they do not know how much they can spend. On the other hand, we are sometimes surprised at the amount expended by some of our committees, as happened in one case last year. After the money is expended, there is nothing to do but pay it. I believe that we should have a more careful regulation of committee funds, so that each committee shall receive its necessary support and no committee spend more than is deemed necessary to carry on its work, therefore

II. I recommend that the chairman of each committee consult the Executive Committee regarding the sum necessary to pursue the work of his committee and that the Executive Committee notify each chairman what sum will be allowed for the work of his committee.

#### WAR WORK OF THE COLLEGES

The colleges of the A. C. P. F. contributed freely to the successful pursuit of the war. Some colleges were so located and prepared that they could contribute more than others, but all were willing and rendered freely all the assistance they could. We are proud of the war record of the pharmaceutical colleges and I believe that this record should be preserved. Not only did the colleges contribute to the successful pursuit of the war, but many of the individual instructors in the colleges gave their services, some in actual service, some on advisory boards, some in Liberty Loan drives, and in many other ways. Numberless students and alumni were in actual service and some made the supreme sacrifice. All of this should make up a war record of which we shall be proud. Now is the time to collect this data and to make provision for its preservation.

I am not quite sure whether this should be done by the Conference alone and the record be made a publication of the Conference, or

whether it would not be better for this record to be a part of the proceedings of the Historical section of the A. Ph. A. I am convinced, however, that such a record should be made and preserved. To me it seems best that this be made a subject of study by a committee of the Conference, therefore

III. I recommend that our Executive Committee be instructed to study this question and be given the necessary authority to make arrangements for collecting and preserving this record.

#### EXCHANGE LECTURES

It is customary in Engineering and Agricultural colleges to exchange lectures with neighboring institutions. An expert in some phase of the work goes to the neighboring colleges and delivers a lecture before the faculty and student body, and in exchange a lecturer is sent to that college to return the compliment. Two things are gained by such an exchange of lectures; first, the faculty and the student body have the privilege of listening to a good lecture, and second, it brings the colleges into closer relationships.

The second advantage is, I believe, a very important one for pharmaceutical colleges. Many of our differences in the Conference are due, I believe, to misunderstandings, and more progress would be made if these misunderstandings were cleared away. It is hard sometimes to get the other fellow's viewpoint. If we knew something of the local conditions, we could better understand each other. We are all working for the uplift of our profession but each man's view is colored by the conditions he has to meet, and therefore when we come together, each with his own problem in mind, we do not always agree even on some things that are fundamental. Such a system of exchange lectures will create a better understanding and spirit between pharmaceutical colleges, therefore

IV. I recommend that the Conference approve and encourage such a system of exchange lectures between colleges.

I have now come to that part of my address that deals with those things which the Conference has advocated but has not as yet fully accomplished. I have some decided ideas about these things, and, since you have honored me by electing me president of this body, I feel it my duty to express them. In doing this I am moved solely by

the purpose of rendering service to this organization and to the profession of pharmacy.

#### NAME OF THE ORGANIZATION

At least two presidents before me have called your attention to the fact that the name, American Conference of Pharmaceutical Faculties, is not an appropriate one for this organization, and each time this body has refused to change its name. I feel very strongly that our name is not in keeping with our present aims, objects, and purposes, and I feel it my duty to call your attention to this fact.

The men who organized this body called it a "Conference" because that is what they had in mind. In its earlier history, this was a conference, that is, "an appointed meeting for discussing some topic or business." We have, however, long since outgrown this name. A conference does not have annual meetings, with definite membership. The name rather implies a meeting of an invited body for the purpose of discussing, not taking action upon, some particular subject or business. We have passed regulations governing our membership, have definitely stated what requirements must be met before a new member will be accepted, have definite annual dues and have even gone so far as to state under what conditions a member may withdraw from this organization, and under what conditions a member may be expelled. This is surely going away beyond the powers of a conference.

An association is defined as "an associate body of persons formed for a common object," a conference as "an appointed meeting for discussing some topic or business." Which name more nearly fits the twenty year old child? In our earlier history, "Conference" was appropriate, but now "Association" is more appropriate. I do not believe that it is in keeping with the best interests of this organization to continue the name "Conference," therefore

V. I recommend that the name of this organization be changed to "The American Association of Pharmaceutical Colleges."

#### INVESTIGATION OF COLLEGES

This is one of the subjects to which this Conference has given considerable attention and yet it has never been satisfactorily disposed of. I firmly believe that a thorough investigation of pharmacy col-

leges will do more for pharmaceutical education in the United States than any other thing that may be done. The report of our special committee on "Short Term and Fake Colleges," given at our last annual meeting showed us very plainly that pharmaceutical education is in a chaotic condition. As long as these "fly-by-night" schools and "diploma mills" continue to operate, we cannot expect pharmaceutical education to advance. We must recognize that many of the recruits to the profession are receiving their "professional training" in these "get-by-the-board" schools. Many young people are hood-winked into believing that all the pharmaceutical education they need is just enough to "get by" the board. Many of these become supporters of these fake institutions and thoroughly believe that they are doing a candidate a favor by inducing him to enter on such a training.

A "graduate" of one of these "colleges" said to me that the conductor of it was "the greatest teacher of chemistry and pharmacy in the United States." This conductor was the one who taught by the new alphabetic method, going from "Acacia to Zingiber" and going over the ground four times. We must recognize that such recruits will cheapen our profession and keep it from securing the recognition that it deserves.

An investigation will do much to eliminate the poorest of these schools and to bring the better ones up to a standard, just as it did in medical education. This investigation must be done by a disinterested organization in order for it to be thorough and impartial. No pharmaceutical organization can do it. The Carnegie Foundation is the logical organization to do this. Our Executive Committee has earnestly tried to get the Foundation to do it, but the answer has always been that the Foundation did not have sufficient funds. It did have sufficient funds, however to investigate engineering education. Evidently this was considered of more importance than the investigation of pharmaceutical education.

I have given this subject serious thought and have come to the conclusion that no ordinary means will be sufficient to impress the Foundation with the importance of this work. We must present this need of investigation in such a forceful manner that we shall secure the serious consideration of the Foundation. I believe that the best way to do this is to prepare a concise memorial, setting forth the conditions obtaining in pharmaceutical education and showing the great need of an investigation of these conditions, and to present this memorial in person, at a meeting of the Executive Committee of the

Foundation. Such a memorial, well prepared, would present a very strong case. The Foundation would very seriously consider such a petition, and I believe, would conduct an investigation for us, therefore

VI. I recommend that a committee of five be appointed to prepare such a memorial and present it in person to the Foundation, and that the Conference pay the expenses of this committee.

The Foundation has always pleaded lack of funds for such an investigation and, without doubt, this is the reason it has never done the work. This Conference should pledge a part of these funds. We can afford to contribute \$1,000 and this will at least pay for the publication of the report of the investigation. Our purpose is "to promote the interests of pharmaceutical education," and there is no better way of promoting these interests than in securing a thorough investigation of pharmaceutical education, therefore

VII. I recommend that the Conference pledge \$1,000 toward the expense of such an investigation.

#### HIGHER STANDARDS

This is another one of the subjects with which the Conference has wrestled a number of years, finally we faithfully pledged ourselves to go to a high school requirement in 1923. During the year, the Philadelphia College of Pharmacy publicly announced its intention of advancing to high school requirement in that year. The University of Maryland College of Pharmacy, according to press announcements, has advanced to this requirement for the fall of 1919. This shows us that we are making progress, and we are glad to recognize it as such; however, that progress is very slow, in fact altogether too slow, as there are still many colleges that require only two years of high school for entrance.

The government, in its published requirements for organization of Student Army Training Corps, made it very clear that it considered graduation from a high school or its equivalent a necessary entrance requirement for colleges of all kinds, and it refused to recognize colleges with less requirements. We should seriously consider this action as the Committee on Education was composed of men whose views are worthy of our consideration.

The Department of Registration and Education of the State of Illinois has recently published its requirements for approved Colleges of Pharmacy and these requirements cover the following points: Incorporation, Laboratories, Course of Instruction, Faculty, Graduation, Admission, and Attendance Requirements, and many other subjects. Under admission requirements, nothing short of high school graduation or its equivalent will be accepted. This means that after September 1st, 1919, no college will be recognized by the State of Illinois unless it meets these requirements. The same is true of Ohio and North Dakota. By pledging ourselves to go to the high school requirement in 1923, we admit that we believe that this is the standard that should obtain. If this is the proper standard, and we have admitted that it is, why wait until 1923 to enforce it? It is a thing that should have been done long ago, therefore the sooner we do it the better. I am opposed to this long period of waiting, because I believe that it is detrimental to the best interest of the Conference and of the profession of pharmacy. We have been pleased to have the various State Boards of Pharmacy accept the standard of the Conference, but we find now that three states at least cannot accept our standard because it is *too low*. Are you content to allow this condition to exist? I am not content with this condition, and I am sure that you are not content with it either. We should raise our standard and at the earliest opportunity, therefore

VIII. I recommend that the Conference go to the high school requirement in the fall of 1920.

#### PREREQUISITE LEGISLATION

At one time a young man learned the profession of medicine by studying and assisting the physician, the profession of dentistry by doing the laboratory work of the dentist and later assisting in treating and filling teeth, and veterinary science by accompanying the veterinarian and noting diagnosis and treatment. That time has, however, passed, and now all of these professions demand a thorough collegiate training of the would-be practitioner. The old time apprenticeship system has been replaced by the modern college, because these professions recognize that collegiate training in modern laboratories is superior to the apprenticeship system. The college saves time and gives the student a better preparation for his life work. This has been so well recognized that in practically all states, college pre-

requisite is demanded by law for entrance to medicine, dentistry, and veterinary science.

Of the professions, pharmacy alone retains the old out-of-date apprenticeship system. It has taken the pharmacists a long time to recognize the value of college training, but today we have a movement in that direction. Many pharmacy students have recognized what the profession in general has failed to recognize, and are securing college training even though the state laws do not require it. We often overestimate the extent of this movement, as there is still a very great percentage of our recruits that do not have college training.

To determine what per cent of the yearly registrants in pharmacy in the United States are college graduates, a letter was sent to the Secretary of each Board of Pharmacy. They were requested to answer these two questions: 1st. How many pharmacists were registered in your state between April 1st, 1918, and April 1st, 1919? 2nd. How many of these were graduates of colleges of pharmacy? The results from these letters tabulate as follows:

<i>State</i>	<i>Total number of registrants</i>	<i>No. of college graduates</i>
Alabama .....	33	No record—very few
Arizona .....	No reply	
Arkansas .....	48	16
California .....		No record kept
Colorado .....	12	3
Connecticut .....	38	4
Delaware .....	3	2
District of Columbia.....	17	14
Florida .....	40	16
Georgia .....	No reply	
Idaho .....	No reply	
Illinois .....	201	46
Indiana .....	63	21
Iowa .....	54	18
Kansas .....	72	21
Kentucky .....	23	7
Louisiana .....	No reply	
Maine .....	No reply	

Maryland .....	36	No record kept
Massachusetts .....	146	29
Michigan .....	205	No record kept
Minnesota .....	100	20
Mississippi .....	25	8
Missouri .....	96	51
Montana .....	61	(Estimated) 10
Nevada .....	No reply	
New Hampshire .....	11	1
New Jersey .....		No record kept
New Mexico .....	40	3
New York .....	321	321
North Carolina .....	10	8
North Dakota .....	5	5
Ohio .....	73	48
Oklahoma .....	118	20
Oregon .....	40	20
Pennsylvania .....	147	147
Rhode Island .....	49	35
South Carolina .....	13	13
South Dakota .....	22	10
Tennessee .....	12	10
Texas .....	103	11
Utah .....	No reply	
Vermont .....	14	4
Virginia .....	No reply	
Washington .....	41	25
West Virginia .....	No reply	
Wisconsin .....	(Change of sec'y—reply promised)	
Wyoming .....	No reply	
Total number of registrants during the year.....	2282	
Number of college graduates reported.....	967	
Per cent. of college graduates.....	42	

This must be interpreted in the light of the fact that in some cases no records of college graduates were kept. These figures do not include those registered by reciprocity. Eliminating those states that kept no record of college graduates, the total number of registrants is 2041, and the total number of graduates 967, or 47.3 per cent. Eliminating the great states of New York and Pennsylvania where they

have had prerequisite laws for a number of years, the total number of registrants is 1814, and the total number of graduates 499, or 27.5 per cent.

With the most liberal interpretation of these results, less than one-half or 47.3 per cent. of the recruits to our profession last year were college graduates, and outside of New York and Pennsylvania this percentage drops to 27.5. If we eliminate those states which have prerequisite laws (Minnesota and Indiana not eliminated) this percentage drops to 26.3. In other words, about 74 per cent. of all registrants in states which do not have prerequisite laws are not college graduates. College education is an accepted requirement for entrance to a profession. While over half of the recruits to pharmacy are not college men, we cannot and never will receive the recognition due a profession.

This data gives us food for serious thought. I am surprised and I believe that you are, too, that there are so many entering pharmacy who have had no college training. We all agree that something must be done to raise the requirement for entering the profession. Since this is a matter for state legislation, the demand for improvement must come from the pharmacists of the several states. The problem then seems to be to awaken the several State Pharmaceutical Associations to the need of prerequisite legislation. I prefer to discuss methods of doing this later.

Fourteen states, namely, Illinois, Indiana, Iowa, Minnesota, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Virginia and Washington (by Board ruling) now require graduation from college for permission to appear before the State Board of Pharmacy. Only five of these had prerequisite legislation before January 1st, 1915. This means that nine, or over 64 per cent. of these states have secured their prerequisites during the last four years. Two of these states, Illinois and Ohio, have raised their requirement for entrance to pharmacy colleges to high school graduation. For years we have had our eyes toward the East, as New York and Pennsylvania were pioneers in prerequisite legislation, and, as far as requirements for entrance to the profession were concerned, stood in the lead. We now must give the laurel wreath to the Middle West as North Dakota, Illinois and Ohio are in the lead. New York and Pennsylvania are, however, endeavoring to catch up as they have recently raised their requirement to two years of high school. Some of our members have been accused of "hitching their wagon to a star"

and having their eyes so high that they miss the practical things. As one man put it, our differences consist in the desire of some to have what *ought to be* and the knowledge of others of what *can be*. Who of us had knowledge that Ohio would, by legislative enactment, go to the high school requirement and that Illinois would accomplish the same thing by a ruling of the Department of Education? It is indeed gratifying to note that some "star wagons" are rising.

During the past four years, prerequisite legislation has made more progress than it made in all the previous years. This is indeed encouraging, yet while less than half of the recruits to our profession are college trained, pharmacy is still away behind its sister professions, and *must* make very rapid progress to catch up. Every state in the union is ready for prerequisite legislation, if the retail pharmacists of the state were awakened to the need of it, and I consider it incumbent upon this organization to present that need.

Any state can easily secure prerequisite legislation if the pharmacists of that state wish it, and no state can secure it if the majority of the pharmacists do not wish it. The question is how to secure the support of a majority of the pharmacists. There are two things necessary to secure prerequisite legislation. First, the bringing of it in its true light to the attention of the pharmacists. Second, the active support of the State Board of Pharmacy. Many retail pharmacists have given the prerequisite law little or no attention, and when it comes up for discussion in the legislature they are opposed to it for fear that it will raise clerk hire and provide fewer clerks. The experience of states that have prerequisite laws controverts this idea. No state that has a prerequisite law would think of going back to the old apprenticeship system. To make sure I should not be in error in making the statement above, I wrote to representative men in the states of Ohio and Illinois, where they have had prerequisite legislation for the last four and two years respectively, and made inquiries regarding the attitude of the retail pharmacists toward this law. I selected these states because of their higher requirement. I asked four questions, two only of which bear upon the subject under discussion.

First, has the prerequisite law been satisfactory to the rank and file of retail druggists of the state? From Ohio came the answer "I believe that I can safely say that the prerequisite law has been satisfactory to the rank and file of the retail druggists of the state. It has furnished them better clerks, and, strange to say, more clerks."

Also from Ohio, "At the state meetings nothing has been said to indicate that there were any objections, certainly nothing in the way of an open discussion. It would be inferred from this, that it has been satisfactory to the rank and file of the retail druggists of the state." From Illinois the answer, "The prerequisite law had the cordial endorsement of retail druggists of the state as expressed by the Illinois Pharmaceutical Association and the Chicago Retail Druggists' Association."

Second question, Has there been any opposition or criticism of the high school requirement? From Illinois came the answer, "I have heard no criticism and much commendation of the high school requirement. It brings pharmacy on a basis comparable with its sister professions of medicine and dentistry." From Ohio the answer, "The retail druggists of the state who were interested at all in this amendment helped towards its passage. The State Board of Pharmacy here is always interested in seeing proper standards prevail. Our secretary is enthusiastic over the results he has obtained from raising standards." Also from Ohio, "The new provisions were favored by the State Association and State Board of Pharmacy and pushed by both. I cannot help but feel that the agitation that has been made for higher standards in pharmacy has helped to educate the rank and file to what higher standards will mean. The fact must not be lost sight of, that the first prerequisite law paved the way, and many of those who predicted such dire results from the passage of the first bill found themselves without any ground for argument against the new bill."

These answers plainly indicate that higher standards are acceptable to the retail druggists in those states that have them. If prerequisite legislation is thoroughly understood, the retail pharmacists favor it, however, it takes considerable discussion and explanation before all the druggists of the state have a proper conception of it. Eight years ago, I presented the subject of prerequisite legislation before the Indiana Pharmaceutical Association, and at that time had only five or six supporters and hosts in opposition to it. Three years ago it secured the unanimous support of the State Association but it was bitterly opposed, principally by those who were prostituting the profession and wished low standards that such prostitution could be the more easily accomplished. One year ago it again secured the unanimous support of the State Association and we were able to secure the law at this year's session of the Legislature.

The history of prerequisite legislation shows us that discussion and agitation are necessary to bring it to the attention of all the retail pharmacists of the state, that they may have a proper conception of it and become cognizant of its successful operation in other states. It is a matter of education, and I believe that the N. A. B. P. and the A. C. P. F. can assist any state that desires assistance by furnishing prerequisite information for distribution among the retail pharmacists.

The second important factor in securing prerequisite legislation is the assistance of the State Board of Pharmacy. The State Board of Pharmacy can wield a tremendous influence in pharmaceutical educational affairs. The majority of the retail pharmacists are ready to accept the advice of the State Board in such matters, because the members of the State Board are retail pharmacists like themselves. The State Board can and does wield a great influence with legislators. The active support of the State Board is necessary for success. The history of prerequisite legislation shows the importance of the State Board's support. I have already mentioned the aid given by the Ohio State Board of Pharmacy. At the meeting of the Conference last year, we were told of the assistance rendered by the State Board of Virginia. Two members of the Indiana State Board of Pharmacy appeared before the committees of the House and of the Senate when we had hearings on the prerequisite bill. They impressed these committees very favorably, and thereby rendered valuable assistance.

On the other hand, if the State Board is indifferent, or opposed to the prerequisite law, it is almost impossible to secure it. Legislators naturally accept the advice of Board members, as they are appointed by the state for the purpose of determining the fitness of candidates for the practice of pharmacy and are therefore in an official position to give advice on matters pertaining to pharmaceutical education, and this advice is usually accepted. It is therefore very important that the State Board favor the prerequisite requirement if such as law is to be secured. Most State Boards are in favor of it, but many of them do not realize how important their assistance is in securing it.

Recognizing the two important things necessary to secure prerequisite legislation, the question naturally arises, how can the Conference assist in securing such legislation? I believe that the Conference, of itself, can do very little, because its efforts in this direction are liable to misinterpretation and it might be accused of having

ulterior motives. However, with the assistance and co-operation of the National Association of Boards of Pharmacy, it can do a great deal. Prerequisite legislation has been discussed in many State Associations and these State Associations are desirous of receiving truthful information on the provisions of existing prerequisite laws and on the operation of these laws in other states. Such information is, as a rule, available but is difficult to find and to collect into a homogeneous presentation. Unless the Association or some of its members are deeply impressed with the need of such legislation, effort may not be expended in securing the needed information.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy are, I believe, the logical organizations to supply this information. If a joint committee of these two organizations were to prepare and offer for distribution to State Associations needful information on prerequisite legislation, I believe that State Associations would be only too glad to avail themselves of it. This committee could even offer to supply lecturers at the expense of the State Association applying for the same, and in this way assist in spreading the gospel of prerequisite legislation. Such a lecturer and such information would have shortened the time necessary in Indiana to awaken the retail pharmacist and I believe that this is also true in other states, therefore

IX. I recommend that the Conference appoint a committee of three to be known as the Joint Committee on Prerequisite Information, to act with a similar committee of the N. A. B. P. to collect and distribute information on prerequisite legislation to all State Associations or other organizations that request it, and to recommend lecturers on prerequisite legislation to all State Associations that request assistance.

My thought is that such a joint committee will act as a Bureau of Information in affairs pertaining to prerequisite legislation, and will be prepared to supply that information to any who may wish it. The committee should make it known to the State Associations in those states that do not have prerequisite laws that it is prepared and anxious to assist them by presenting truthful information on prerequisite legislation.

In conclusion, I wish to say that I fully appreciate the honor you conferred upon me by electing me to the office of President of this

organization, and I wish to thank you for that expression of confidence in me. During my incumbency, I have given the affairs of the Conference much consideration, and in offering these recommendations, I am moved by the desire to benefit our profession and to make the Conference more effective. I hope that they will be received in the same spirit in which they are offered.

At the close of this address, it was voted that it be referred to a committee of five, and the Chairman appointed as members of this Committee those whose names follow:

Henry H. Rusby (Chairman), Columbia University, College of Pharmacy of the City of New York.

E. Frank Kelly, University of Maryland, Department of Pharmacy.

Albert H. Clark, University of Illinois, School of Pharmacy.

Julius W. Sturmer, Philadelphia College of Pharmacy.

Edward Spease, Western Reserve University, Cleveland School of Pharmacy.

The report of the Secretary-Treasurer was called for, and Secretary-Treasurer Bradley read the following:

#### REPORT OF SECRETARY-TREASURER

August 25, 1919.

To the American Conference of Pharmaceutical Faculties:

The Secretary-Treasurer respectfully submits the following report for the past year. As his experience in the work has increased, he has found more work to be done during the past year than in the preceding one. By our customs and by-laws, much of the work of a corresponding secretary falls upon the Chairman of the Executive Committee, but there are still many duties for the Secretary-Treasurer to perform, including the preparation and publication of the *Proceedings*, and the collection of dues. It is pleasant to record the hearty co-operation which has been possible at all times with Dr. Koch, whose long experience as Chairman of the Executive Committee gives his services great value to the Conference.

With special effort, it was possible to publish and distribute the *Proceedings* of the 1918 meeting early in 1919 while the contents were still alive, and in time to be of use to the officers and committees of the Conference in doing their work and in preparing for this meeting. An edition of five hundred copies of the *Proceedings* was issued,

of which 425 copies were bound in paper for distribution to faculty members, drug journals, etc., and 75 copies were bound in cloth for distribution to college and general libraries. The *Proceedings* are now so voluminous that it would be pleasant to have the entire edition bound in cloth, but the cost would be prohibitive with our present income.

As voted at the last meeting, the *Proceedings* of the joint meeting of the Conference and the National Association of Boards of Pharmacy were published in a nearly complete form in the *Journal of the American Pharmaceutical Association*, through the kindness of Editor E. G. Eberle, and reprints were obtained and distributed to the member colleges.

At the suggestion of Dr. Willis G. Gregory, of Buffalo, N. Y., reprints of sections of the *By-laws* having to do with the qualifications for membership in the Conference, were prepared and about four hundred copies were sent to individual members of state boards of pharmacy, to all colleges of pharmacy in the country, to editors of drug journals, and others. This was done, primarily, to acquaint state board members with what has been accomplished by the Conference in the matter of standardization of colleges of pharmacy, as this question is often brought up at meetings of the Association of Boards. The publicity secured, however, appears to be beneficial in other ways, several inquiries concerning membership in the Conference having been received from colleges which are not members.

The number of member colleges in the Conference is 46, there having been no change during the past year: one member is in arrears for dues, all others being paid to date. Bills for dues are sent out in October and several times later when necessary. It would be well to adopt a by-law to drop members from membership for non-payment of dues, after, say, two years. Judging from past experience, such a by-law would not be used to any great extent, but it would be a good argument for the Secretary-Treasurer to use in dunning delinquent members for dues.

The financial report to follow shows that there is a moderate balance in the Treasury, but some modification of our financial policies will soon be necessary, as the receipts now approximate five hundred dollars per year, and the expenditures are about eight hundred dollars per year. The increased size and cost of the *Proceedings* account for the largest item of expense. In the hope of keeping our dues down to the present amount of ten dollars per year, most of the committee

expenses have been paid, in the past, by the individual members of the committees, but one committee last year presented bills for more than sixty dollars, which were paid. If all committees should do likewise, the Conference would soon be bankrupt. It is not pleasant to contemplate an increase in the dues of the Conference, but it will be necessary to double our income in the near future, or else greatly reduce our expenses.

# FINANCIAL REPORT, 1918-1919

## Receipts

1918.

Aug.	1.	Cash on hand.....	\$1,057.33
"	26.	Highland Park College, for 1917-'18.....	10.00
Sept.	10.	Highland Park College, for 1918-'19.....	10.00
Oct.	7.	Meharry Pharmaceutical College.....	10.00
"	8.	Albany College of Pharmacy.....	10.00
"	9.	St. Louis College of Pharmacy.....	10.00
"	11.	Fordham University, College of Pharmacy.....	10.00
"	11.	South Carolina Medical College, School of Pharmacy..	10.00
"	14.	National College of Pharmacy.....	10.00
"	15.	University of Maryland College of Pharmacy.....	10.00
"	17.	Louisville College of Pharmacy.....	10.00
"	17.	College of Pharmacy, City of New York.....	10.00
"	17.	University of Michigan College of Pharmacy.....	10.00
"	21.	Massachusetts College of Pharmacy.....	10.00
"	24.	Creighton University College of Pharmacy.....	10.00
"	24.	University of Southern California, College of Phar...	10.00
"	24.	University of Mississippi, College of Pharmacy.....	10.00
"	25.	Buffalo College of Pharmacy.....	10.00
"	28.	Purdue University, College of Pharmacy.....	10.00
"	28.	Oregon Agricultural College, Dept. of Pharmacy.....	10.00
"	28.	University of Iowa College of Pharmacy.....	10.00
"	29.	Cleveland School of Pharmacy.....	10.00
Nov.	1.	University of Illinois, School of Pharmacy.....	10.00
"	1.	University of Notre Dame, Department of Pharmacy.	10.00
"	2.	Brooklyn College of Pharmacy.....	10.00
"	6.	California College of Pharmacy.....	10.00
"	11.	University of Kansas, College of Pharmacy.....	10.00
"	11.	South Dakota State College, Dept. of Pharmacy.....	10.00
"	11.	University of Washington, College of Pharmacy.....	10.00
"	15.	Ohio State University, College of Pharmacy.....	10.00
"	18.	University of Minnesota College of Pharmacy.....	10.00
"	18.	University of Wisconsin, Course in Pharmacy.....	10.00
"	18.	Pittsburgh College of Pharmacy.....	10.00
"	18.	University of Nebraska, College of Pharmacy.....	10.00
"	18.	Tulane University College of Pharmacy.....	10.00

Nov. 20.	Philadelphia College of Pharmacy.....	10.00
" 21.	Vanderbilt University, College of Pharmacy.....	10.00
" 21.	University of Tennessee, College of Pharmacy.....	10.00
Dec. 16.	Medical College of Virginia School of Pharmacy.....	10.00
" 16.	University of Montana, School of Pharmacy.....	10.00
" 18.	University of Oklahoma, School of Pharmacy.....	10.00
1919.		
Jan. 8.	Baylor University, College of Pharmacy.....	10.00
" 24.	University of the Phillipines School of Pharmacy....	10.00
Feb. 10.	State College of Washington, Dept. of Pharmacy.....	10.00
" 12.	Alabama Polytechnic Institute, Dept. of Phar. (2 yrs.)	20.00
Mar. 11.	University of North Carolina School of Pharmacy....	10.00
May 15.	North Pacific College of Pharmacy.....	10.00
July 31.	Interest to date.....	22.66
Total .....		<u>\$1,549.99</u>

#### Summary of receipts

Cash balance from preceding year.....	\$1,057.33
Dues from 2 member colleges for 1917-'18.....	20.00
Dues from 45 member colleges for 1918-'19.....	450.00
Interest on treasury balance.....	22.66
Total .....	<u>\$1,549.99</u>

#### 1918. Disbursements

Sept. 9.	Thorp & Martin Company, blank book for registration at meetings.....	\$ 5.50
" 9.	C. B. Jordan, expenses—Committee on Exam. questions	10.82
" 9.	E. N. Gathercoal, expenses—Com. on Exam. questions	10.00
" 9.	C. O. Lee, expenses—Committee on Exam. questions	7.56
" 9.	Bernard Fantus, expenses—Com. on Exam. questions	25.00
" 9.	Secretary-Treasurer, postage.....	10.00
" 16.	J. A. Koch, postage, etc.....	17.12
" 16.	J. A. Koch, expenses to 1918 meeting.....	62.47
" 21.	Spatula Publishing Co., letterheads.....	7.00
" 21.	Pharmaceutical Syllabus Committee.....	25.00
Oct. 10.	E. A. Ruddiman, expenses—Com. on Exam. questions	9.00
Nov. 29.	Exchange on checks.....	.10
Dec. 16.	J. G. McLean, stenographer's report, 1918 mtg.....	125.00
1919.		
Feb. 6.	Amer. Pharm. Assoc., reprints of reports on Short term courses in pharmacy.....	4.60
Mar. 1.	Postage on Proceedings, etc.....	45.00
" 7.	Ethel J. Heath and Mabel E. Jennison, clerical work..	20.00
" 12.	C. W. Bascom, envelopes.....	4.25
" 12.	Rapid Service Press, 1918 Proceedings.....	441.20
" 31.	Exchange on checks.....	.10

Apr. 26. Rapid Service Press, reprints and envelopes.....	19.00
June 20. Postage stamps .....	5.00
July 20. Ethel J. Heath, clerical assistance.....	10.00

Total .....	\$ 863.72
July 31. Cash on hand.....	686.27

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\$1,549.99

The balance on hand is divided as follows:

On deposit in State Street Trust Co., Boston, Mass.....	\$ 86.27
Liberty Bonds, carried at par.....	600.00

Total .....	\$686.27
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The Secretary-Treasurer stands ready to buy some or all of the Liberty Bonds, as additional cash is required.

Respectfully submitted,

THEODORE J. BRADLEY,  
Secretary-Treasurer.

It was moved by Dr. Anderson, seconded and carried, that the report of the Secretary-Treasurer be referred to a committee of three, and the President appointed on this committee, Messrs. Edsel A. Rudiman, Charles O. Lee and Lucius E. Sayre.

The President then appointed a Nominating Committee, with the following membership: Willis G. Gregory (chairman), Edwin L. Newcomb and Washington H. Ziegler, to bring in nominations for President, Secretary-Treasurer, chairman of the Executive Committee and two other members, and for a member of the Syllabus Committee.

Dr. Julius Koch, as Chairman of the Executive Committee, reported as follows:

Mr. President and members: The by-laws require the Executive Committee to send out a tentative program thirty days before the annual meeting. This was done, but I should like to make a few changes and corrections at this time. There are several changes necessitated by changes in the plans of the other organizations. The printed program gives, as the Chairman of the Committee on Activities of Students and Alumni, Dr. William Mansfield. Prof. Lyman is chairman of that committee, Dr. Mansfield being chairman of the committee on Uniform College Bulletins. Two special committees are omitted from the printed program, the Committee to consider and

report on the establishment of two classes of pharmacists, and on corresponding courses in colleges of pharmacy, Dr. Diner, chairman, and the committee to work out methods of acquainting high school students with the opportunities in pharmacy, Dr. W. J. Day, Chairman.

It is proposed to finish our business today; that is, to have this session and another session tonight at eight o'clock, and immediately following that our executive session. This latter will be somewhat longer than usual, as we have matters for discussion which will probably take considerable time. It is to be hoped, however, that we shall be able to finish the business of the Conference tonight. This is in order that we may have a joint session with the Boards of Pharmacy at 9.30 in the morning. It was put on the program for a different time, but as the opening session of the Pharmaceutical Association begins at 3.30 we thought it best to arrange for a joint meeting in the morning.

During the year we have had one application for membership, which will be presented at the executive session tonight. We have had inquiries for blank applications, but that has been the end of the correspondence.

In connection with the requirement of four years of high school work for admission to colleges of pharmacy, which the President has taken up very carefully in his address, I should like to report that I have a tabulation of statistics covering the education of students before entering and that the number of high school graduates is gradually increasing. This past year, out of a total of 1647 students admitted to our schools of pharmacy, 64.9 per cent. were graduates of high school or better,  $9\frac{1}{2}$  per cent. over three years of high school, 16.7 per cent. over two years. I am sure that the two and three-year students could have undoubtedly shown more, if it had been required, but as most of our schools require only two years, they submitted only that part of their work which was necessary.

With regard to the investigation or examination of schools of pharmacy by the Carnegie Foundation, I should like to say that the Carnegie Foundation has never said that they did not have the means to carry out such an examination or investigation. Our last communication from them was to the effect that they expected to take the matter up at a very early date. I have every reason to think that on account of the undue activities of the past year they have been unable to take it up, but that they will do so at a very early time.

The Executive Committee has very little to bring before you. There is one matter, however, that ought to be called to your attention, and that is in regard to establishing pharmacy courses in high schools. I have a communication from the Detroit Institute of Technology, requesting an opinion regarding the establishment of classes of pharmacy in the Detroit High School. I do not know what has been done, but I simply wish to call attention to the fact that we must be on the lookout for such occurrences.

Dr. Rusby: I might say that the Institute of Technology is now sending out a prospectus of a School of Pharmacy, a department of the Institute, but it has no connection with the high school.

Dr. Koch: This had reference to the establishment of a course of pharmacy by the Board of Education of the City of Detroit.

Dr. Kraemer: The high school proposes to give courses in pharmacy, qualifying students for registered pharmacists, and the very serious situation which arises is this which will come to your attention. A year ago I approved, if you will recall, a high school giving a certain amount of instruction in pharmacy, provided it should be limited to students becoming helpers in pharmacy, not with the idea that they should ever become competent to run drug stores, as contemplated at the present time. It is inimical to the progress of pharmacy in this country for any high school to contemplate a complete course in pharmacy.

Dr. Koch: I see that the communication I referred to is from the College of Medicine and Research in Detroit and not from the Board of Education.

The President: Probably our only defense is prerequisite education, proper requirements.

The report of the National Syllabus Committee was called for, and was read by Dr. Gregory as follows:

#### **REPORT OF THE PHARMACEUTICAL SYLLABUS COMMITTEE**

August, 1919.

The Pharmaceutical Syllabus Committee respectfully submits the following report.

A well attended meeting was held at the Congress Hotel, Chicago, Illinois, on August 14, 1918, at which plans for the preparation of the third edition of the *Syllabus* were worked out. At this meeting it was finally decided to prepare a syllabus for a third year course

leading to the degree of Pharmaceutical Chemist, in which a part of the work shall be required and a part elective by the colleges offering the course. The required subjects are to be advanced manufacturing pharmacy, bacteriology, and advanced analytical chemistry: the elective subjects are to be advanced work in dispensing, pharmaceutical jurisprudence, micro-analysis, advanced botany, physiological testing, advanced organic chemistry, chemical technology, and urine analysis.

Work on the revision has progressed very satisfactorily in spite of the disturbed conditions due to the war, and it is expected that the third edition will appear early in 1920, according to schedule.

The Committee is made up of twenty-one members, seven of these representing the American Pharmaceutical Association, seven the Conference of Pharmaceutical Faculties, and seven the Association of Boards of Pharmacy: thirteen states are represented in the membership.

New members of the Committee have been appointed during the year as follows: Edsel A. Ruddiman, of Tennessee, from the Conference of Pharmaceutical Faculties, and George W. McDuff, of Louisiana, from the Association of Boards of Pharmacy. The following sub-committees have charge of the three principal sections of the *Syllabus*:

Pharmacy—W. H. Rudder, Chairman; W. C. Anderson, Albert Bolenbaugh, G. C. Diekman, W. G. Gregory, H. B. Mason, C. M. Snow.

Chemistry—J. A. Koch, Chairman; T. J. Bradley, E. G. Eberle, G. W. McDuff, O. W. Osterlund, E. A. Ruddiman, C. H. Skinner.

Materia Medica—H. H. Rusby, Chairman; M. C. Beebe, G. M. Beringer, John Cully, El. E. Faulkner, C. B. Lowe, E. L. Newcomb.

Each of the associations represented on the Committee regularly contributes twenty-five dollars per year towards the expense of the Committee's work, and it is requested and recommended that these contributions be continued. When the second edition of the *Syllabus* was issued, the Committee was in debt for several hundred dollars, but this indebtedness has now been paid, and a balance is now accumulating in the Treasury which it is hoped will prevent a similar indebtedness when the third edition is issued.

The Committee realizes the difficulty of its task and that it can hope only to make each edition of the *Syllabus* show an improvement

over the preceding edition: it is believed that the coming third edition will show a marked improvement over the second one.

Signed:

THEODORE J. BRADLEY, Chairman.

For the Committee.

This report, by motion duly made and carried, was received, and the recommendation therein adopted.

The report of the Committee on Higher Educational Standards was read by the Chairman, W. J. Teeters, and on motion of Dr. Anderson, seconded by Dr. Gregory, it was voted that it be referred to the Committee on President's address for action. The report follows:

#### **REPORT OF THE COMMITTEE ON HIGHER EDUCATIONAL STANDARDS**

The existence of this committee grew out of a recommendation contained in the presidential address of Dean Wulling at the sixteenth annual meeting held at San Francisco, August 6, 1915. The recommendation suggested that this standing committee act with similar committees from the National Association of Boards of Pharmacy, The American Pharmaceutical Association, and the National Association of Retail Druggists. In the report of the committee on the first part of the President's address, which was adopted, we find that the wording of the recommendation is as follows:

That the Standing Committee on Higher Educational Standards be appointed by the President of the Conference, to work jointly with similar committees of the American Pharmaceutical Association, the National Association of Boards of Pharmacy, the National Association of Retail Druggists, and the State Associations, such committees to work with their parent associations as well as jointly.

We find that two reports of this committee have been given, one at the 17th annual meeting, and one at the 18th annual meeting. At the 17th annual meeting, held at Philadelphia, August 31, 1916, Chairman Rufus A. Lyman, in his report, called attention to the fact that no other national association or no state association, as far as he was able to find, had a standing committee of similar function. Dr. Lyman called attention to the fact that inasmuch as the National Association of Boards of Pharmacy, at their 1915 meeting, recommended that in 1920 Boards of Pharmacy should require four years of high school training preparatory to the taking of an examination, we

feel that it is now time for this Conference to take action making the four-year high school requirement binding for all institutions holding membership in the Conference with the beginning of the academic year of 1920-21.

It should be stated that the Conference of Pharmaceutical Faculties in 1915 voted what has since been known as the Detroit Resolution, which was that this Conference require two years of high school for entrance in 1917. At the meeting in 1916 it was voted to make the Resolution commendatory.

In the report of this committee by Chairman C. H. Stocking at the 18th annual meeting, held at Indianapolis, Indiana, August 27, 1917, the following information was given.

No. of schools requiring 1 year of high school for entrance.....	9
No. of schools requiring 2 years of high school for entrance.....	11
No. of schools requiring 3 years of high school for entrance.....	1
No. of schools requiring 4 years of high school for entrance.....	10

The vote by mail on high school graduation as a requirement for the Conference for 1920 resulted as follows: Twenty voting for high school requirement in 1920, eleven opposed, and one doubtful. At the 18th annual meeting at Indianapolis it was voted that the members of the Conference require four years of high school work for entrance, this requirement to go into effect September 1, 1923.

There are members of this Conference who believe that but little progress has been made in educational standards. While it must be admitted that progress has been slow, yet some progress has been made. A tabulated statement of the results of the reports of the Executive Committee shows that students entering the Conference colleges are year by year entering with better educational preparation.

	1 yr.	2 yr.	3 yr.	4 yr.
1912-13 out of 1195 students reported	511	138	117	429
1913-14 out of 821 students reported	241	152	78	350
1914-15 out of 1063 students reported	237	170	93	563
1915-16 out of 1240 students reported	219	193	135	693 or more
1916-17 out of 1176 students reported	168	190	104	714 or more
1917-18 out of 1041 students reported	171	162	98	578

The records of the Conference have been searched to find the arguments for and against higher educational standards. It is safe to say at the outset that there is not an institution or member of the Confer-

ence that is not in favor of higher educational standards. The question seems to be as to how this can be brought about without diminution of the number of students attending the institutions.

It has been pointed out in the Conference several times that there are two distinct classes of institutions holding membership in the Conference namely, the so-called old-line schools, and the university colleges of pharmacy.

The old-line school has been built up upon the apprentice system of education and most of them depend upon the tuition fees from their students for their support. The university colleges have state aid and therefore can charge less for tuition and have the advantage of liberal support in equipment. It is a question of whether institutions under such severe competition can, unless they become heavily endowed, hold their own for any great length of time. The number of state supported schools is increasing. This situation taken as a whole has had a great deal to do with the attitude taken toward the educational problem before us.

Arguments against higher educational standards:

1. The oldest and most repeated argument "Give the poor boy a chance" has not been heard in late years.
2. The statement has been advanced in this Conference that students with poor preparation sometimes excel in class records and it is argued that for this reason they should not be debarred.
3. That it is not possible for all students to get a high school education in all parts of the United States without enforcing hardships upon pupil and parents, therefore there should be certain exempted areas.
4. That the demands of the drug store, as frequently run, do not require extensive technical training, and that our constituency will be handicapped for help such as it needs.
5. Of late years the argument to go slow has been heard repeatedly, coupled with the statements that the Conference has no power, and that some members would be forced out of the Conference if advancement were too rapid.

These are the arguments as taken from our Conference records.

Arguments for the higher educational standards:

1. The poor boy argument really needs no answer, for no one wants to stultify himself by stating that we have poor boys in this country, if they are made of the right kind of stuff and really want an

education. There is not a university in the country that does not have students making part or all of their expenses while doing their school work, and many of them are excellent students. They understand what they are in school for. They can do the same thing to get a high school education if necessary, and many are doing it.

2. The second argument that students with poor preparation frequently excel as students is occasionally true. We have all had this experience—occasionally. It should be kept in mind, however, that had these same individuals had the proper educational advantages, they might have become still better students than they were. It is no argument against proper preparation, for these occasional students with exceedingly keen minds are likely to occur at long intervals, but even in their case it is a question whether an injustice has not been done them personally, for they would have been capable of greater things had they been compelled to qualify properly.

3. To the third argument the Conference itself has gone on record and recognized that certain sections of the country have been temporarily handicapped for high school facilities, and have made exceptions for certain states, thereby showing their fair-mindedness, knowing as they did when they made the exceptions that institutions situated within such exempted territory become competitors to the surrounding territory in an unfair degree.

4. The fourth argument, that the profession does not demand high skill and technical training, seems unfortunately to be true in some cases. It should be observed, however, that poorly prepared pharmacists mean unskilled druggists and usually a business that is unethical. The general public should receive the same skill and protection from the one prescription filled in such a store as the ninety-nine filled in stores of high class. The public is not able to judge. You cannot build up pharmacy as a profession by incompetent recruits.

5. The last argument, to go slow, means to go slowly in all educational requirements that our particular school will not have a slump in the number of students. In other words, it resolves itself into the dollar and cents proposition.

That the Conference has no power is a technical whip used only in desperation. It is true that the Conference has only a moral power, but with forty-six colleges holding membership, and legislation based upon our action, it certainly has a great influence.

The sympathy argument of withdrawal has been used effectively in the past. It is a question, however, whether it would not be better

to drop an institution rather than nurse it along. This is a question to be decided in the Conference as a whole and in the past it has shown great charity.

The Boards of Pharmacy have the great burden and responsibility in making rulings in advancing standards. The Conference of Pharmaceutical Faculties should accept its true share of responsibility. We believe that it will do so.

The position of pharmacy in the army and navy is well known to us all. The fundamental reason why pharmacy has not been recognized is also well known to be due to lack of educational standards. We do not care to argue whether the S. A. T. C. settled this point or not, but we have the records to show what the government considers necessary to qualify as a profession and this should settle the question so far as we are concerned and indicate to us our duty.

That higher educational standards result in more intelligent and better educated pharmacists, a reduction in the number of drug stores, better salaries for clerks, and more profits for the proprietor, is the statement of President Stone of Purdue University before the Indiana Pharmaceutical Association.

We wish to recommend the reaffirming of the proposition that the Conference of Pharmaceutical Faculties require four years of high school work for entrance, this requirement to go into effect not later than September 1, 1923.

The report of the Committee on Faculties, Miss Cooper, Chairman, was read, and it was voted that it be received for publication:

#### **REPORT OF THE COMMITTEE ON FACULTIES**

At the request of President Jordan, this committee undertook a specific task, that of investigating the qualifications of teachers in Conference colleges. Though it involved looking into records of individuals, the committee was not concerned with individuals except incidentally, but rather with institutions. What President Jordan had in mind was to determine the fitness of any institution to give the sort of training that Conference colleges purport to give.

The Committee on Faculties which reported in 1917 made some definite recommendations about the number of people that should constitute a minimum faculty, and also what their qualifications should be, and the report was passed, I believe, without discussion. Though those recommendations never became requirements, they

furnished something tangible to follow and, upon them, the chairman of this committee framed a questionnaire which was submitted to the other members of the committee for suggestions. Without exception, the members of the committee felt that there could be "no good reason why they should not be eagerly answered," that if colleges were willing to give the desired information they might be counted among those that "have a reason" for withholding it and that "the only thing that one need be ashamed of is the fact that an intentional weakness might be uncovered" and that the Conference ought to know about such a weakness. Your committee is at loss for an explanation of the fact that only a few more than half responded, twenty-eight to be exact. Of the remaining eighteen, it is plain that in the majority of instances, the institution has no reason to be ashamed of its staff, quite the contrary in fact. In the light of these results your chairman regrets that an explanation was not appended permitting the records to be filled out with names blank, in order that it might be definitely understood that the questions were not asked in any spirit of inquisitiveness, that it was the institution's strength as indicated by the qualifications of its staff that the committee desired to determine.

The revised questionnaire that was sent to the Deans of all the colleges asked for the number of instructors and the rank of each, when and where each was graduated and what degree was received, the teaching experience of each, and lastly, the ratio of students to teachers.

Since only a little more than half of the colleges replied, most of the conclusions are based on those reports, notably, the teaching experience and practical experience and ratio of students to teachers. The number and rank of instructors as well as their degrees was obtained for the other colleges from their announcements for 1917-18, so that the statements which have to do with these particulars are based upon the entire Conference membership.

With so many institutions scattered so widely and with neither titles nor degrees standardized, particularly the former, it is not humanly possible to say that one institution measures up and another fails to. One institution has many professors and few of lower rank and another will show exactly the opposite condition while the teaching experience and degrees may be practically the same. Perhaps you can appreciate what a stupendous task it would be to obtain personal information, a task which the committee could hardly undertake. So it happens that the statements made are largely dependent on judg-

ment, and if they are wrong it is because the chairman's judgment was not always sound.

Taking up the qualifications separately: The 1917 committee recommended a minimum faculty of five professors, the subjects covered being pharmacy, chemistry, botany, materia medica, and pharmaceutical chemistry, with other instructors as per number of students enrolled. The advisability of four additional professors was suggested, for bacteriology, pharmacognosy, analytical chemistry and physiology, making a maximum of nine with as many other instructors as necessary. Of the twenty-eight colleges reporting, two had been discontinued. On the whole, the twenty-six others more than meet the minimum requirement of five, and putting into this group associate professors and assistant professors, which I believe gives a fairer comparison, more than half of them have seven or more. The colleges that did not report show even a better proportion. Taking all of both groups totalling forty-four (this discrepancy from Conference membership being due to the two schools that had discontinued for the present year) twenty-five per cent have nine or more professors, fully meeting the former committee's figures though in some of these the distribution of subjects is different. Eight or ten colleges do not have the minimum five professors. In these cases there are instructors and lecturers and assistants so that the total exceeds that of some other colleges that fully meet the minimum. In some of these, doubtless, the grade of work suffers, but I should hesitate very much to offer any specific criticism on this score for the simple reason that where I have personal knowledge, as it happens I have in several cases, the quality of work done is excellent, even superior to that of some of these others with five or more professors. It all comes back to the fact that the bestowal of rank is possibly not alike in any two institutions in the Conference.

It is impossible to make any sort of classification of instructors, lecturers and assistants, and perhaps it does not matter since their number is supposed to be contingent upon enrollment. The total number of instructors of all ranks in any faculty should mean something, however, and I find that it ranges from five to twenty-seven. These figures are for instructors teaching in the regular courses of two or three years, as the case may be. The maximum figure for colleges connected with universities would in every case be much larger if the entire staff of teachers for Ph. C. and B. S. courses were considered.

Quite a number of them, would show a maximum of thirty and a few would run as high as thirty-five.

Making a statement about degrees is almost as difficult as that about titles. On the whole it appears that members of the various staffs have had adequate preparation, though almost none meet the particular qualification suggested, that of the degree of B. S. in Pharmacy. However, that recommendation added "or its equivalent," and that is why I said just now that the preparation seemed adequate. Since a B. S. degree in Pharmacy is comparatively new, few teachers with the number of years' experience found among professors have had it. Instead, other pharmaceutical degrees are the rule with other degrees or other college work in science or arts indicated.

Teaching experience and practical experience both run high. With few exceptions it appears that most teachers fully meet the recommendations in these particulars, at any rate in point of time. More than that we can not say. Practical experience may include several years of bottle washing along with the most scientific prescription compounding and the finest business training and, though teaching experience can not show such diversity, it may show considerable.

Here and there weaknesses are indicated, for the most part weaknesses of which the Deans are aware and which they mean to remedy at the earliest possible time. Probably there are few institutions without weaknesses, even the very best in the Conference, but they may not be due to insufficient preparation of their teachers, and please keep in mind that apparent qualifications are all that this report aims to cover.

After all, degrees and teaching experience and practical experience may mean so much or so little. No member of this committee would depreciate for a moment any one of them, but since a report like this can not get far beneath what appears on the surface, it may not be amiss to call attention to a fact which every one knows, that no number of degrees, no amount of time spent in teaching or in the practice of one's profession will make good teachers of some people. Each of you has in mind at this very moment some individual who has been on some staff for many years and has spent as many, perhaps, in actual practice and who has several degrees to his credit, and yet has not the ability to impart knowledge and fails to instill into his students the spirit of learning. Not having personal knowledge of these misfits, this committee is not prepared to report except on apparent qualifications.

One point only remains, that of the ratio of students to instructors. The twenty-six colleges reporting show a minimum of two to one and a maximum of twenty to one. Only two reached the maximum and most of them were considerably lower. Since twenty to one had been thought to be the largest ratio consistent with good work, all are safely within the margin. It might be added that in a good many cases these figures are based on the enrollment of previous years, for the present year was so disrupted in every way that it was hardly representative.

There remain to report a few instances that apparently fall short of the recommendations we have been using for comparison. An institution with three professors, two associate professors and two assistant professors shows some interesting peculiarities. The Dean has a Ph. G. degree from a non-Conference school and also a B. S. and a D. V. M. from other colleges. He teaches pharmacy and materia medica, has had a teaching experience of six or seven years, part of which was in veterinary science and has had six years' experience as a practicing pharmacist. Another professor teaches physiology (human presumably) and veterinary science (whether in the school of pharmacy or in some other school we are not prepared to say). He has the degree of D. V. M., has had more than twenty years' teaching experience and nearly as many as state veterinarian. The members of the staff who are teaching chemistry, pharmacognosy, and related subjects show good qualifications in every way and the ratio of students to teachers is four to one. Now it may be that these very people are more competent pharmacists and better teachers than some others whose degrees are altogether pharmaceutical. Neither this committee nor any other committee working so superficially and at such long range is competent to pass judgment upon that point. However, the peculiarity is rather striking. It has been reported to me that another institution has discontinued its school of pharmacy permanently, a school which I had included here. Since I have been unable to verify the report, perhaps the evidence should be submitted. Its' staff, as given in the latest announcement obtainable, numbers five which, it is true, meets the suggested minimum, but only one pharmaceutical degree appears. Neither rank nor length of service is given or much other information. Whether they have few or many students and whatever the ability of the staff may be one pharmacist seems hardly enough to make certain the presentation of allied subjects from the standpoint of pharmacy.

The original copies of all the reports are in the chairman's possession and will be turned over with the text of the committee's report if they are thought to be of any further use.

The President stated that at this time he would like to make a change in the program, so instead of going on with the reports of committees, he would call for a paper by Dr. Henry H. Rusby, which dealt with matters closely connected with the subjects of the last reports. Dr. Rusby then read the following paper:

#### **THE BETTERMENT OF SALARY CONDITIONS IN OUR SCHOOLS OF PHARMACY**

The salary conditions at present prevailing in American schools of pharmacy are highly unsatisfactory. I am not aware of any exception to this rule. I know of no such school in which the salaries of the teaching staff have advanced during the past five years proportionally with the advance in the cost of living. In nearly every school with the affairs of which I am familiar, there has been either no or very little increase in the number of dollars paid as salary. There might have been a considerable increase of that kind with the salary still undergoing a decrease, for the same number of dollars now represents but little more than half of the former value, as estimated in its purchasing power. If the value of the dollar is now only 58 per cent of what it was in 1914, which is the official statement of the Federal Government, then a salary expressed in the same number of dollars has in the meantime been cut nearly to half of its former amount by the gradual depreciation of the dollar.

The statements above, which are indisputable, are no more true than that it is the duty, as well as the privilege, of every class of workers to endeavor to maintain their own compensation on a par with that of other classes of workers. It is then our duty to inquire whether anything can be done to ameliorate the unfortunate position that our profession occupies in this respect. I believe this question to be the most important one to which this Conference can give its attention at the present time. Our personal financial interest constitutes perhaps the least important of the considerations involved. The dignity and standing of our profession, as well as its welfare, demand that just recognition of its importance and value be accorded. Professional men, and especially scientific men, have been culpably negligent in this matter, and thereby have fallen into a certain degree of contempt among the business

classes. I am fully aware that our professional service is ordinarily our first consideration. If the welfare of that service so demanded, we should be willing to serve for partial compensation; otherwise, we actually do wrong in submitting to such a condition, for we thereby weaken the influence of our professional work.

The question naturally follows, what, if anything, can be done to correct the condition. My answer is that, since the cost to us of rendering our services has nearly doubled, and since the money value of that service to those who receive it has undergone a corresponding increase, it is entirely logical, just and appropriate that our compensation should undergo the same change.

In considering the available means for accomplishing this result, I shall consider three classes of schools:

1. Those dependent for their revenue on instruction fees.
2. Those supported by private endowment, in addition to instruction fees.
3. Those supported by a public appropriation.

The case of the first class is by far the most simple. They are engaged in a sort of merchandising operation, except for the fact that they seek no profit; nothing beyond proper maintenance. They offer a diploma, possessing an earning value, for the mere cost of supplying it. This earning value and its production costs having increased together, can any dissenting voice be raised against the claim for an increased price for the diploma? All such schools should, in my opinion, at once raise their fees by at least 50 per cent.

The second class of schools have been hard hit by the decrease in their incomes dependent upon the shrinkage of the dollar, and there is little hope of a sufficient increase in income from the endowment side. They can, however, increase their fees, for precisely the same reasons as apply in the case of the first class of schools.

In the case of the third class, the propriety of applying the same remedy is not so obvious, yet, when carefully studied, it is found to be equally appropriate. State institutions nominally supply free tuition, but so far as I am able to judge, the actual cost of a year's attendance is not less than that charged by schools of the other classes. These costs may, with propriety, undergo a sufficient increase to afford the needed relief. There is here, however, another consideration. The theory of state support is that the state, as a whole, receives the value, directly and indirectly, of all such expenditures. Obviously then, the state should pay more for what it gets when the cost of supplying

it increases, as well as its value. In reality, therefore, this class of schools possesses a double leverage in securing the desired, and altogether just result.

In applying these methods of relief, it is obvious that there should be a concerted effort among our schools. Such a combination is not in any sense, nor in the slightest degree, in violation of anti-trust laws, for the reason that we are seeking no profit whatever, but only the necessary means for maintaining the service that we are giving.

So clear and indisputable do these conclusions appear to me that I anticipate no dissent from them, not even among those upon whom we press our claims. I therefore offer the following resolution and move its adoption:

RESOLVED, That a committee be appointed, said committee to elect its own chairman, to take such steps as may be necessary to cause the ratio of salaries to cost of living to be increased to a point equal to that of five years ago; and that the committee report at a later session of our present meeting.

The President: I was very much interested in reading in Collier's recently that teachers were being classed with preachers, that the men entering these professions were not the best, because the salaries were so poor, and that the good men in them were getting out. It is a very vital question, and I think we ought to do all we possibly can. I hope that paper will be sent to the Boards of Trustees.

Dr. Rusby's resolution was seconded by Dr. Anderson and unanimously carried. The President appointed on the committee, Dr. Rusby of Columbia University College of Pharmacy of the City of New York, Dr. Johnson of the University of Washington College of Pharmacy, and Dr. Clark of the University of Illinois School of Pharmacy, to whom the paper was referred, and the action of the Conference in reference to it.

The report of the Committee on Activities of Students and Alumni was called for and Dr. Lyman, the Chairman, spoke as follows:

Mr. President and members: I have only a verbal statement to make. On account of the S. A. T. C., the students' organizations of our country were practically abolished. There was no time for any student activity. In the S. A. T. C., every minute that wasn't taken up by school work was taken up by war work or the

War Department, or perhaps I ought to put it the other way around. Fraternities ceased to exist and most undergraduate societies. During this time it has been impossible for the Committee to carry out any of the investigations specifically ordered by the Conference last year. After the S. A. T. C. was abolished last year in December, I found that things were in a chaotic condition, and that many of the students had left the colleges, so I can say only that the work has been practically *nil* this year. I hope that things will get back to something like normal conditions with the opening of the schools this coming fall, and that this committee, whatever its personnel may be, will be in a better position to carry out the directions which the Conference gave a year ago, and I, as Chairman, will so recommend.

It was voted that this report be received for publication.

The President: As to the Committee on Uniform College Bulletins, Dr. Mansfield wrote me a short time ago that he had been seriously ill, and was unable to prepare a report for that committee.

The Committee on Relations of Pharmacy Schools and other Professional Schools, Dr. Rudd?

Dr. Rudd: I shall make only a brief verbal report. At a meeting of the Association of American Medical Colleges, in February, the wording of the law with reference to pre-medical credits was changed, and it reads about as follows: "Beginning at such a date, there shall be required two years of pre-medical education, taken in such colleges as may be recognized by the proper accrediting agency." May I repeat that,—“Two years of pre-medical education in such colleges as may be recognized by the proper accrediting agency.” I take it that the state accrediting agency may give credit for a course in pharmacy, in dentistry, or in veterinary surgery that is the equal of a similar course given in a strictly academic school. The American Medical Association has an accrediting agency in each state. It has, at least, an agency which it stands sponsor for.

Dr. Diner: I am afraid I am at a loss to understand just what is the attitude of the American Medical Association. I know that in the state of New York a student desiring to study medicine may do so if he secures a medical student's certificate from the Regents of the state of New York, and they in turn may issue such a certificate to a man who has obtained his education in part in a school of pharmacy, but I am also sure that they are making it compulsory to have two years,—for the state of New York,—in a school or college that gives a B. A. or a B. S. degree, and they do not classify schools of

pharmacy as belonging to that type of college. My understanding may be incorrect, but I know it is not incorrect as far as New York is concerned. A boy may have four years in high school and two years in a college of pharmacy, for which the Regents may give him certain credits, but if he goes to a class A medical school in the state of New York and desires to obtain credit for that time, he will find it will not be granted for they will recognize nothing short of two years pre-medical work in a college which gives a B. A. or a B. S. degree.

Dr. Rudd: I know just how this works out in Virginia. A man with a high school diploma for five years' work comes into a college of pharmacy and graduates and then makes application for entrance into a school of medicine. In the schools of pharmacy, giving only two years' work, certain subjects required for pre-medical work are not given at all, for example, academic physics, or a really good course in biology; therefore this man making application for entrance into a medical college is not eligible at all, he must go to an institution giving the required courses in physics, in biology, and so many hours in laboratory work. He must have sixty semester hours and a definite proportion of those hours must be given to physics and biology. When he gets his sixty semester hours all together, he is then passed up to the proper accrediting agency. We took a specific case and put it before the American Medical College Association. It is up to our accrediting agency, and we have nothing further to do with it.

The President: If one of your students went to another state?

Dr. Rudd: Their accrediting agency would have to pass upon it.

Dr. Rusby: In the state of New York the situation is very unpleasant indeed. The wording of the law is that students must have had two years in a school or laboratory. In a university a man may matriculate in one school and take part of his instruction in another school. If a man should matriculate in Columbia University in the School of Pharmacy and take all his instruction in Columbia College, he would not be admitted to a medical school because he was not matriculated in Columbia College, even though he should take the full pre-medical course in Columbia College. On the other hand, if he took all his instruction in Columbia College and was matriculated there, he would be admitted. That is the interpretation of the law.

Dr. Rudd: At the meeting in Chicago this whole matter was thoroughly discussed, from every possible angle, and the wording

was changed from "academic institution" to "an institution recognized by an accrediting agency," as I have just mentioned.

The Secretary: The chairman of the committee of the American Medical Association in charge of this matter is a Boston physician, and I have been in touch with him at various times during the past few years, and I think it is possible for us to get credit for one year of the two years of college work required for admission to a medical school, but they must go to a regular college for the other year, because we do not teach the required biology and physics.

Dean Spease: May I add a word or so, for I remember several specific cases a year or so ago. A graduate from the Ohio State University, had his B. S. degree from the College of Pharmacy, but that was not accepted as the degree required at Western Reserve University as entrance to the Medical College, and likewise in the other two or three medical schools that require bachelor's degrees for matriculation. This same medical school has since passed a resolution that a B. S. degree from a college of pharmacy incorporated in a university will be accepted as the degree requirement. That change was a little bit of a victory. The same question has come up with one or two other men. One who graduated from the college of pharmacy at the State University and received this B. S. degree wants to go to the University of Chicago to pursue a higher degree, and they will not accept his B. S. degree as preparatory to a Master's degree, Master of Arts or Master of Science, because it came from a school of pharmacy. It seems to me that this Conference might do something to assist those men to secure credit for that B. S. degree, when they wish to do graduate work in some other line than pharmacy.

The President: We are not trying to prepare our students for medical colleges, but every one of us is vitally interested when our students go to medical colleges.

It was voted that the report of Dr. Rudd's committee be received for publication.

A report for the Committee on Research was read by the Chairman, Dr. Henry Kraemer, as follows:

This is the day of commercialization. The business fever has broken out everywhere, and scarcely anyone is immune and exempt from its demand. Everything is commercialized. Under the tutelage of good business, every influence and power is brought under surveillance and subjection. Good business requires a first-class

commodity for sale, and the production of a salable article requires brains. Research laboratories, no matter how unpretentious, are today a part of the establishment of the high class manufacturing industries. Men of initiative are in demand as never before. Men who can produce what is wanted are required. The opportunities for the men who are searchers and who can apply research are numerous and lucrative. It is no longer a question as to whether five or ten years of study in preparation at a university will pay a man, as it is a foregone conclusion that with ordinary ability and application anyone who is carefully trained will increase his earning powers and attain positions of preferment.

We may dislike to approach the subject of research in this selfish and heartless way. The motive is frequently anything but ideal, as the only kind of research which is worth while is that which will produce a fine order of scholarship and the best type of manhood. While this applied research, as it is being demanded by "big business," is not just what we ought to strive for, it is necessary for us to understand it and that we map out a program so that we can supply the men and women to meet its demand.

It is important at a conference of teachers that we do not allow ourselves to be unduly swayed by the current of popular thought. We must remember that this day of extravagance will give way to the simple life and it is inevitable that men like Thoreau will again occupy the stage and thrill us with the contentment and satisfaction that comes to him who leads the natural life. In a profession like ours we may well revert again and again to the sentiments so ably expressed by Professor Charles A. Kraus of Clark University in an address on *The Future of Science in America*. In considering the relationship of pure science and the industries he says:

"I come now to the second factor which has contributed and is still contributing to our scientific backwardness. I speak of the depreciation of ideals among those teaching science in our colleges, universities and technical schools. This cause is much more insidious than the first. It has crept in little by little and not infrequently has masqueraded under philanthropic guise. The scientist, to be worthy of the name, must be possessed of an insatiable desire to extend knowledge in its most fundamental aspects. He must not count the years of preparation required to actually master his subject, nor the labor necessary to transmute a crude idea into a well polished, finished scientific product. He must never be satisfied with mediocrity, and must ever strive to increase his scope in order that he may produce results of more fundamental importance. With the increasing development of technical science has come increased

temptation to leave the tasks of pure science, often laborious and exacting, to turn to minor technical investigations which are less exacting in time and effort and more certain of reward. Under the guise of cooperation with the industries, many a promising man has been led to give up his pursuit of pure science to do the tasks of technical chemistry, tasks quite often which technical chemists find too unimportant to carry out themselves. Cooperation between the universities and the industries is most desirable, but, in the main, the universities will carry out their task in providing the industries with an adequate supply of men who possess a broad training and whose ambitions are not entirely focussed on merely increasing their salaries. On the part of the industries, cooperation consists in making it possible for those in academic positions to carry on their work to best advantage, that they may be free from unnecessary uncertainties and interruptions. The diversion of large portions of the academic staffs from the pursuit of the fundamental problems of pure science to dabbling in the minor details of technical science adds little of direct value to the industries, and so lowers the tone of scientific scholarship that technical science as well as pure science must inevitably suffer in the long run. I firmly believe that technical science in America is well able to take care of itself, provided it is able to obtain well trained men from the universities and technical schools. On the other hand, pure science stands in grave danger of never being developed at all."

The outlook for the development of research in pharmacy is distinctly encouraging. Your Committee can hardly add anything to the excellent report presented by the Chairman of the Committee, Dr. Edward Kremers, a year ago, which should form the basis of the deliberations of this Committee for some years to come, until we develop some practical, working plan. The Committee for this year hardly feels that conditions are ripe for the serious consideration of any one of the recommendations which were adopted unanimously by the Conference a year ago. We shall, however, present some reflections, consider the progress of research in the United States as it relates to pharmacy, and present a plan which may have some merit.

From the expressions which we read in the pharmaceutical journals, it would seem that we are hardly mature enough to develop a production program, because our minds are not made up to give ourselves entirely to the research spirit. I do not mean to say that the men entering into these discussions do not comprehend something of the need for research, but there is lacking a good deal of the broad mindedness and the unselfishness which are necessary for the promotion of research.

President Richard C. Maclaurin of the Massachusetts Institute of Technology, in a very excellent address on *The outlook for research*

delivered at Clark University, has called attention to some of the forces making against first-rate work being done in America. He said:

"A serious source of danger in this country lurks in an otherwise excellent thing, our peculiar devotion to *institutions*. Practically in all cases the institution overshadows the man. That this should be the case with the mass of students is not at all surprising; but it is surprising with the few who make it their life-work to master a certain subject. It is almost incredible that these should fail at any time to recognize the importance of coming in close personal contact with the master in their chosen field. In the realm of physics an Englishman who has selected his life-work does not go to Cambridge, but to J. J. Thomson or to Larmor, just as a Scotsman did not go to Glasgow but to Kelvin, nor a German to Berlin but to Helmholtz. Our men are learning this lesson slowly, but they still go far too much to Harvard or to Yale or to Columbia."

That was indeed a splendid editorial in the *Journal of Industrial and Engineering Chemistry* and displayed what a big-hearted man the editor is. As you know, he was educated in the south and later was graduated from Johns Hopkins University and yet he was not afraid to glory in *Cornell's good fortune*. Morse Hall was destroyed a few years ago by fire and President Schurman, at a dinner at Cornell University, announced in the words of an anonymous donor that he would provide a chemical laboratory, fully adequate to the needs of the University and according to the *Cornell Sun*, "The statement, uttered by the President, was greeted with cheer after cheer by alumni and undergraduates alike, for they fully realized the need for an adequate chemical laboratory." Said the editor of the *Journal*, "Those cheers will find a sympathetic echo among all American chemists, no matter where located or what institution is claimed for Alma Mater."

Another serious source of danger that we have in pharmacy, which is an otherwise excellent thing, is our devotion to the word "pharmacy." Unless the word "pharmacy" occurs in the text, we seem unwilling to subscribe to a work no matter how great it may be. Unless the word "pharmaceutical" is unmistakably written in the plans for the development of an Institute we shake our heads dubiously and give the impression that the plan is doomed to failure no matter how well conceived and directed it may be by one of America's greatest leaders, a man of breadth of view, of calm judgment and exceptional ability in securing the cooperation of America's ablest scientists.

Probably the great event of the year was the announcement in the *Journal of Industrial and Engineering Chemistry* of an "Institute for Cooperative Research as an Aid to the American Drug Industry." The editor of this Journal in the September issue for 1918, page 674, succinctly outlined what was contemplated,

"Namely, that an institution somewhat analogous to the Mellon Institute be founded, in which adequate provision for laboratory tests of all kinds would be made and to which, through the establishment of fellowships, manufacturing organizations could send well-trained young men for working out specific problems. Cooperation should be established between this institution and the organic laboratories of our universities, as well as with the hospitals of the country.

"An institution of this character would prove a great stimulus to the creation of more adequate research facilities within the manufacturing establishments, for the great glory of the Mellon Institute lies, it seems to us, not so much in the actual results obtained under its roof as in the indirect creation of research departments in industries which first caught the full significance of research through the fellowships established in that institution."

The project was discussed in a symposium by eminent scientists at the meeting of the New York Section of the American Chemical Society, on November 8, 1918. These addresses are published in the December issue of the *Journal of Industrial and Engineering Chemistry*, pages 969-976. This was, in turn, followed by a discussion in the *Journal* (Jan. 1919, pp. 59-69; April, page 377) by manufacturers and men known for their interest in the development of research. The addresses of the symposium and the discussion in the *Journal* are well worthy the careful perusal of every one interested in the development of research in pharmacy.

It would be very unsatisfactory to attempt to present a summary of these papers, or even the criticisms which have been made concerning the proposed Institute. There is no doubt but that the members of the Conference of Pharmaceutical Faculties will accord the project their cordial support. We may call attention to some of the things which the Institute does not propose to undertake and some of the work which it hopes to accomplish.

1. The Institute for Cooperative Research as an Aid to the American Drug Industry was originally conceived by Dr. Charles Holmes Herty, editor of the *Journal of Industrial and Engineering Chemistry*. He has discussed it with a number of people whom he thought could supply constructive ideas. He is personally responsi-

ble for the fundamental idea of the Institute and has given much of his time to the working out of the practical details.

2. So far the matter has been handled entirely by a Committee of the American Chemical Society, of which Dr. Herty is chairman. This Committee is only empowered to investigate the matter and report to the president of the American Chemical Society.

3. It is not expected that this Institute will be financed by drug manufacturers nor is it intended to approach the American drug manufacturers for the money necessary for the research laboratory. On the other hand, the general sentiment among manufacturers is in favor of the proposed Institute. Furthermore it has been emphasized at every meeting of the American Chemical Society's Committee that such an Institute must be entirely independent of the drug manufacturers and must not be financed by them.

4. It is not expected that the staff of the Institute will concern itself at all with technical problems, but only with the most fundamental problems in regard to the action of drugs. In other words, the research is to be along purely theoretical lines with the view of building a foundation for research whether pure or applied.

5. The plan of the Institute seems to be somewhat as follows:

- a. To secure an endowment, preferably from a single source, large enough to carry on the proposed work without being limited by financial consideration.
- b. To secure a permanent scientific staff of the most able men available in the various lines of research, and to arrange for the closest cooperation between the members of the staff in solving the fundamental and largely unknown problems relating to the mechanism of drug action. This would require practically the undivided time and attention of the members of the staff.
- c. To provide for fellowships which could be established by individuals, firms, or associations, for the study of specific problems, either of a theoretical or a practical nature, the expense of such investigations to be met by those establishing the fellowships. Investigations of this character would be carried out entirely by fellows appointed for the purpose, and would have only the general supervision and advice of the scientific staff of

the Institute. Educational fellowships probably of post-doctorate order might also be established. Fellows occupying these positions would assist in the strictly theoretical research of the permanent scientific staff. In no case, however, would this staff be burdened with administrative duties nor with the active direction of research not intimately connected with the theoretical problems being studied. In fact, the whole object is to bring together a group of research workers of the very highest type, specializing in different fields and cooperating to the fullest extent in solving problems connected with disease and its treatment by drugs.

As the members are aware, there is a committee of the American Pharmaceutical Association on research, and we are happy to report that an announcement has been made (*Journal A. Ph. A.*, June 1919, p. 450) as follows:

"The American Pharmaceutical Association has available a sum amounting to about \$240 which will be expended during 1919-1920 for encouragement of research. This amount, either in full or in fractions, will be awarded in such a manner as will, in the judgment of the A. Ph. A. Research Committee, produce the greatest good to American pharmaceutical research.

"Investigators desiring financial aid in their work will communicate before August first with H. V. Arny, Chairman, A. Ph. A. Research Committee, 115 W. 68th Street, New York, giving their past record and outlining the particular line of work for which the grant is desired.

"The committee will give each application its careful attention and will make recommendations to the American Pharmaceutical Association at its meeting in New York, August 25-29, 1919, when the award or awards will be made."

In considering the problems of research, it seems to us that this Conference can do three things:

1. Make it clear to our members and the governing boards of our colleges that it is very desirable for the members of the faculties to devote part of their time to research. Professors and instructors should not be over-burdened with teaching. They should have the proper amount of assistance and part of their time should be devoted to original researches or reading and the preparation of articles and books.

2. In view of the many opportunities for securing grants for research, we do not believe that it would be advisable for this Committee to solicit special funds nor should the Conference devote part of its money for the research fund. We believe that the influence of the Conference would be sufficient to back up the petitions of any of our members for grants, providing, of course, that the research would seem worth while and would be deserving of such support.

3. It is very desirable that the Conference develop some definite program for research. We do not believe that the Conference ought to "back up" any petition for a grant unless the investigator is engaged in a piece of work which the Conference considers both desirable and essential. The problem ought to be of a pharmaceutical character and if possible of immediate practical interest. A list of topics might be prepared by the Committee on Research, embodying suggestions from our members. The preparation of such a list will be by no means easy, for there are very few men who do enough actual work to see what is really important and worth while, or feasible for one to undertake. Such a list would be very stimulating to graduate students and ought to be helpful even to our members. By engaging in a definite program it would be possible for some one work to be completed, even though it required the efforts of a number of investigators over a period of years. One of the greatest difficulties connected with obtaining funds for research has to do with the selection of the problem, and the question invariably suggests itself, what will the work amount to after it has been done?

The problems which suggest themselves may be brought under the following groups:

1. *Phyto-chemical*, or those involving a study of drug plants and their constituents. The work of Dr. Frederick B. Powers, Edward Kremers, F. W. Heyl, J. O. Schlotterbeck, and Huseman, are examples of what might be continued to the advancement of pharmacy.

2. *Galenical Pharmacy*.—Much work might be attempted with the view of improving medicinal preparations. It is surprising how little is new and how nearly all methods are by a sort of rule of thumb and without any scientific basis. Of course, the best preparations can never be produced until the chemistry of drugs and their constituents, particularly regarding their solubility, are pretty generally understood. I wish that we had more men of the type of Squibb, who developed *acettracts* and Mr. Beringer, who worked upon the *fluid*

*glycerites*. Whether what they accomplished was equal to their anticipations and claims or not, they each made valuable contributions to pharmacy.

3. *Pharmacognosy*.—In view of the difficulties in the identification of very many of our crude drugs, owing to the fact that when dried so many vegetable substances resemble each other, it is very important that researches in pharmacognosy be pursued more intensely than ever before. There is no doubt that much of what is known is not applied every day, and that the warnings which we have had still pass unheeded. Buyers insist on purchasing marjoram leaves without fully comprehending that at the present time the chances are that the drug from foreign sources is very likely to contain the leaves of the poison sumac. Thirty years ago, E. M. Holmes, curator of the Pharmaceutical Society of Great Britain, called attention to the fact that a poisonous fruit was likely to be mixed with or substituted for cubebs, this fruit somewhat resembling the official article, but differing in its sulphuric acid test. And yet within recent years, 50 per cent or more of the commercial lots are so adulterated. These instances are mentioned merely to call attention to the practical importance of a phase of pharmacy which is unfortunately sadly neglected.

4. *Deterioration of drugs and preparations*.—A subject of very great importance is the keeping qualities of drugs and preparations and the conditions under which improvements may be made. Twenty-five years ago a great deal of this kind of work was done, and the manufacture of galenicals today is largely the outcome of this work undertaken by retail pharmacists and manufacturers. On the subject of crude drugs alone there would be a vast saving in buying, as well as in preventing deterioration and absolute loss, by closer study of the moisture content. The moisture in drugs is probably entirely responsible for the ravages of insects and has a very great deal to do with the changes in the constituents. It has been shown, for instance, that the heating of extracts like catechu and kino, or thoroughly drying them prior to the making of medicinal preparations, will prevent the gelatinization of the tinctures made from them. We know now that thorough drying alone is sufficient to prevent any deterioration in digitalis, and probably in the preparations made from it. Dr. E. R. Squibb always ground up ergot as soon as the fresh drug was imported, putting it in small packages of paraffin paper and keeping it in stock ready for use. He thus limited the damage, by deteriora-

tion through insect attack, to small portions and prevented the spread through the entire shipment.

5. *Physiological Assay*.—A subject which is bound to command greater attention with the on-coming years, is the testing of drugs on animals. The necessity for a standard authority, and for standards of technique and material, requires that this subject be investigated almost from the beginning. The conflicting statements in the literature almost tend to throw discredit on the whole subject, when *a priori* we know that the method of physiological assay is logical and ought to be conclusive. I may merely mention a recent experience in the testing of insecticides on the common household fly. Insect powder would kill them in from 10 minutes to 1 hour; ground hellebore, in from 6 to 12 hours; and sodium fluoride not within 24 hours. If any one has any doubt as to the value of the testing of drugs on animals, let him try these experiments. Our studies in determining the quality of drugs by these methods should be extended, not only to a greater variety of animals, but a larger number of drugs should be studied in this way.

We do not desire to prejudice the Conference by indicating either what departments are most important, or what subjects should receive immediate consideration. Your Committee will welcome suggestions, and will gladly assist investigators in securing the necessary funds and materials, by "backing up" the request of members for grants from those institutions having funds especially set aside for such purposes. We accordingly recommend to the Conference that the committee be authorized to prepare a list of approved subjects for investigation, and that, secondly, the Committee on Research be empowered to recommend to the Executive Committee of the Conference for favorable action and support, the petitions of any of our members for grants from such organizations and institutions as have research funds provided and available.

HENRY KRAEMER, Chairman.

Dr. Army: Is that a report? May I ask how many members signed that report?

Dr. Kraemer: I stated before reading it that I had not seen my colleagues nor been able to confer with them. If they disagree with me, I shall be glad to meet them and make such changes as are necessary.

The President: I understand that that carried no definite recommendation concerning that Institute.

Dr. Kraemer: No recommendation.

Dr. Army: I object to any recommendation concerning the Institute, not only as chairman of the Research Committee of the American Pharmaceutical Association, but also as a member of the Conference Committee on Research.

Dr. Clark: I should like to say a word on one point in connection with this, and that is that we know absolutely nothing about this proposed Institute at all, its objects and purposes. The committee of which Dr. Herty is the head or chairman has not reported, hasn't said anything about what it is to be. Dr. Kraemer has said considerable about what it is supposed to be, but until that committee reports, I think it would be a serious mistake for the Conference to go on record as approving of that thing. We can not approve a thing about which we know absolutely nothing.

Dr. Army: Might my minority report go on file? The American Pharmaceutical Association has tried, not once, but half a dozen times, to get Dr. Herty to discuss this matter, but he has evaded it. I requested Dr. Herty to take lunch with me and discuss it and he said he was busy at that time.

Dr. Rusby: I am going to move that this report be referred to the Chairman of the Committee with the request that he confer with his colleagues with reference to any modifications they may desire to make, before publication.

This motion was seconded and carried.

The report of the Special Committee "To consider and report on the question of two classes of pharmacists and corresponding courses in the colleges of pharmacy," was read by the Chairman, Dr. Jacob Diner, as follows:

Even a superficial consideration of this subject brings out the enormity of the task which this committee undertook. Nor do we harbor the belief that our report is complete. It is, at best, but a mere outline containing the suggestions of many men, and is submitted with the hope that a free discussion will enable us to formulate a complete outline of both the classification of pharmacies and of the college courses, to the end that pharmacy may at last claim a well deserved position among the professions.

Before submitting the outline, permit us to make an appeal to the members of the association to have in mind *only* the best interests of the public and the profession of pharmacy. Let us divest ourselves of all petty personal considerations and eliminate from our discussion what are known in legislative circles as "spread-eagle speeches for home consumption." Let us forget the so-called "poor boy" who is always paraded before us whenever advancement of pharmacy is under discussion. At the same time let us bear in mind the practical as well as the scientific and ethical needs of pharmacy. It can be of no advantage to pharmacy, nor will it make for its progress, if we talk of colleges with the highest type of equipment, of preliminary and professional requirements second to none, and at the same time maintain so-called "short courses" for the purpose of quizzing ignorant and illiterate people through a more or less rigid state board examination.

Your Committee feels that the question of the advisability of separating drugstores and pharmacies should be answered by the pharmacists themselves. We are certain, however, that whatever the answer may be, no success can be looked for unless the whole-hearted backing of the N. A. B. P., the A. C. P. F., and the legislative committees of the State Pharmaceutical Associations of the United States can be secured.

Assuming that there is need for the separation and classification of pharmacies, the following suggestions are submitted for your consideration:

#### A. DRUGSTORES.—B. PHARMACIES.

##### A. DRUGSTORES

1. *Scope*: The sale of all articles now commonly found in pharmacies excepting poisons not used for commercial or household purposes (such as paris-green, oxalic acid and the like.)

2. *Qualifications*: (a) The owner to be a graduate of a recognized school or college of pharmacy, requiring four years' high school as preliminary education, and not less than two years' attendance at the school previous to graduation. Provided, however, that this restriction shall not hold against any person possessing the proper degree as at present understood at the time that the act becomes effective, nor against any person at that time matriculated for such a degree in a recognized school or college. (b) Owner must be licensed in the state in which he conducts his business.

3. *Assistants:* Non-licensed assistants may make sales of all goods not used as remedial agents without the direct supervision of a licensed pharmacist, and may sell remedial agents *only* under the direct supervision of a licensed pharmacist.

4. *Equipment:* (a) latest editions of the U. S. P., the N. F., and a Dispensatory; (b) scales and complete sets of weights of both systems; (c) graduates or measuring glasses of both systems; (d) a sufficient assortment of all other utensils necessary to carry on the business of a pharmacist.

## B. PHARMACIES

1. *Scope:* (a) Preparation of galenicals and other pharmaceutical products. (b) Compounding prescriptions and sale of poisons. (c) Examination of drugs, foods, body-fluids. (d) Preparation and sale of biological products. (e) Sale of sick-room appliances.

2. *Qualifications:* (a) Individual ownership. (b) The owner to be a graduate from a recognized school or college of pharmacy having a four years' high school preliminary requirement and not less than four years' professional training course. (c) The owner must be licensed by the state to practice pharmacy.

3. *Assistants:* While unlicensed assistants, or those having lesser qualifications than are required of the owner, may be employed, they are not permitted to take charge of a pharmacy, or to perform work mentioned under 1. *Scope:* a to d, inclusive, except under the direct supervision of a fully qualified pharmacist.

4. *Equipment:* To include in addition to those generally found in pharmacies: (a) a compound microscope with oil immersion lens; (b) an incubator with thermo-regulator; (c) sterilizers, steam, hot air, autoclave; (d) electric centrifuge; (e) analytical balance sensitive to not less than 0.1 mgr.; (f) a working library to include the latest editions of the U. S. P., the N. F., and a Dispensatory.

## SCHOOLS AND COLLEGES

1. A school may engage in the teaching of both of the proposed courses and in the turning out of both classes of graduates.

2. The work of the lower course may be subsequently accepted as the first part of the higher course. A graduate of the lower course may, by attendance at the school, make up that part of the first two years of the higher course which is not included in the lower course, and may then be admitted for advanced standing in the higher course.

## COURSES

### *Course 1.—Leading to degree of Ph. G.*

**Requirements:** Four years of high school preliminary education, or its equivalent as accepted by the Regents or Education Department of the state in which the school is located.

**Course:** Two years, in two different calendar years, of three days each week, 30 weeks each year, and not less than a total of 1,200 hours.

**Curriculum:** As outlined in the *Pharmaceutical Syllabus*.

### *Course 2.—Leading to degree of B. S. in Pharmacy.*

**Requirements:** Four years preliminary, as for course 1.

**Course:** Four years, during four different calendar years, of 30 weeks each year, five and a half days each week and not less than 800 hours each year. This course may be divided into two equal periods of two years each. During the first two years the course in pharmacy may follow the outline of the *Pharmaceutical Syllabus* and in addition the following subjects are to be included: advanced English; a foreign language; mathematics; laboratory physics; history, including the history of pharmacy and chemistry.

The last two years are to include: (a) Pharmacy: the making of more complex preparations, not taken up in Course 1; testing and assaying of galenicals. (b) Chemistry: physical chemistry; advanced inorganic, including analytical chemistry; synthetic and analytical organic chemistry; biological chemistry, including that of body-fluids. (c) *Materia medica*: advanced physiology; botany and pharmacognosy; pharmaco-dynamics. (d) Bacteriology; general; special (the pathogenic bacteria). Immunology, including the preparation of vaccines. (e) Clinical diagnosis: chemical and microscopical. (f) Food and drug analysis: chemical, bacteriological and microscopical.

In conclusion we wish to extend our heartfelt thanks to all those who cooperated in making the outline, and especially to Drs. Rusby, Jordan, Kelly, LaWall, Bradley, Kraemer and Stewart who gave us many valuable suggestions and constructive criticisms, much of which is embodied in this report.

Respectfully submitted by the Committee of the American Conference of Pharmaceutical Faculties.

Dr. Diner: There were similar committees appointed by the American Pharmaceutical Association, and by the National Boards;

the report to the American Pharmaceutical Association is identical with this report.

Dr. Anderson: I should like to move that the report be received and referred to the different organizations mentioned in the report, and that the Association of Retail Druggists be included also, and that this committee be continued.

Dr. Diner: It is not proper for a chairman to speak on his own report, but I should like to say that when men come to an annual convention, they come to take back to their own organizations not their sentiments, but the sentiments of the different parts of the country from which they hear. I think this report should be discussed by the different organizations interested. If simply accepted without any discussion, I do not see that we get much benefit or much light from it.

Dr. Anderson: There is nothing in my motion that precludes the idea of discussion by the Boards or by the A. Ph. A. I should recommend, rather, that the report be taken up for discussion at all of these meetings.

Dr. Kraemer: The report is of such a nature that we can not very well discuss it unless we have copies of it. You may hear a thing read, which may appear very ideal, very excellent; but just as soon as you stop and examine it, you may find defects, or that it is impracticable or impossible. I think this body should have copies of the report if we are to discuss it intelligently. It would be very unfortunate to present this report with any deliberations for the consideration of the other organizations interested; I can foresee what would happen, because this report represents the committee's work and not the views of the Conference. It does not represent my own views. In certain particulars it is a little bigger.

The President: You want to amend Dr. Anderson's motion, that it should be deliberated upon by us before sending it to the other bodies?

Dr. Diner: A member of the committee who has had a type-written copy of this report for four weeks finds himself unable to discuss it? Dr. Kraemer was a member of that committee.

The President: It seems to me also that we ought to discuss this before going to the joint meetings. We might discuss it with the committee from the Boards before we take it to the A. Ph. A. meeting. I do not see why that report should not be received and digested for a whole year.

Dr. Diner: On the surface that looks all right, but if I should tell you the history of it, you would understand better. I did not expect this to come up until tomorrow morning; I didn't expect to give my paper until then. I want you to realize that this is a very serious subject for us to dismiss in this off-hand way.

Dr. Sayre: It seems to me that we should have the essential points before us, so we may come to the joint meeting prepared. It seems that there are two main points, two kinds of pharmacists and two kinds of schools.

Dr. Day: As a substitute for the former motion, I move that the discussion be limited to those two points, that the paper be published in the *Proceedings* and that we then consider it carefully.

Dr. Anderson: I should like to see each of these organizations have an opportunity to discuss this. I do not see why the Conference can not discuss it tomorrow or later, and then have it come up in the joint meeting.

Dr. Diner: It is bound to come up in the American Pharmaceutical Association, for they have a report.

Dr. Kraemer: What we want to realize, gentlemen, is that this is a Conference problem, and we are thinking it out, our minds are not made up. We are in the position of a merchant who is going to have a sale in the morning and is painting his signs and getting all his goods ready for the public. We do not know where we are, and we do not want to present anything right now to the public. Let us discuss it and get the benefit of that discussion, and then, when we do present it, we shall have something worth while, which will represent the action of the Conference.

Dr. Anderson: We have the basis here of a splendid work, and I should hate to see it not carried out. Did you see that article in the *Druggists' Circular*, and the action of the New York Association? We do not want to give these fellows all the credit.

Dr. Day: It wasn't my purpose to stop the discussion, but simply to provide for more details. I doubt whether we can do very much in the short time remaining. We ought to have a chance to think these things over carefully, and that is why I proposed that the paper be published in our *Proceedings*, and that we take no further action on the report at this time.

Dr. Diner: The report, of course, is not complete. It is a mere outline.

The question was put to the assembly and Dr. Day's substitute motion prevailed.

It was voted on motion of Dr. Sayre, that there be a discussion at nine o'clock of the two main features spoken of and that the discussion be confined to those two features.

The report of the special committee to work out methods of presenting pharmacy as a calling to high school students was called for, and Dr. Day, the chairman, read the following report:

With a large number of the Conference schools already requiring high school graduation for admission, and with others preparing to make the same requirement soon, there can be no difference of opinion regarding the importance, even the absolute necessity, of bringing to the attention of high school students the opportunities offered by pharmacy as a calling.

While the schools of pharmacy are immediately interested, yet the problem is of no less importance to pharmacists generally, and therefore to all pharmaceutical organizations, local, state and national. Unfortunately there has been a tendency to belittle pharmacy as a vocation, due in a considerable measure to the dissatisfaction of pharmacists themselves with their own condition. The betterment of the business side of pharmacy, quite apparent during the last few years, should to a considerable extent overcome this tendency, and let us state here that it is a mistake to assume that the practice of pharmacy as ordinarily carried on makes little appeal. The drug store should be and often is made attractive; the drug business is clean and respectable; the hours are not so long as formerly, and do not deter the young man who plans to engage in business on his own account; the capital required is less than in many other lines and the prospects of financial success better than ever before. Not a few druggists have paid income taxes on earnings of from five to ten thousand dollars a year during the past two years. And, considering the prospects of establishing a business which can be handed down from father to son, and which in times of illness or incapacity can be managed by another and still yield the owner a comfortable living, the prospect is not unattractive.

Further there is to be considered the constantly widening field for the pharmaceutically trained chemist and increased demand for such service. Young men and women with this training have a preparation which enables them to undertake with good prospects of success not

only the manufacturing, purification and valuation of pharmaceutical products, but also the examination of urine and secretions, bacteriological examinations generally, investigation of foods, and even many special tasks which now seem not altogether remote from pharmaceutical practice.

Certain it is that unless pharmacy is attractive, as we firmly believe it to be, both in opportunity for service and in the prospect for a reasonable financial return, our efforts to bring well-prepared young men and women into the field will result in failure or in but partial success. But, granted this, there remains the urgent need of calling the attention of those from whom we would recruit our ranks to such opportunities as pharmacy affords. This is a matter of advertising and we have two methods of approach, the direct and the indirect. In brief, the direct method is chiefly concerned with satisfying the demand already existing, while the indirect or general method is almost entirely concerned with *creating the demand*, and for this reason should receive our most careful consideration.

#### DIRECT METHODS

Lists of high school graduates are accessible, or may be had for a relatively small price. An attractive bulletin and a well-formulated letter sent to each one is the usual procedure, and is no doubt effective, but it must be remembered that the recent graduates are being bombarded with such "literature" and are apt to give it small attention. At least we should not wait until the time of graduation to plead our cause. The attention of the high school student should be secured early in his course, so that he may select his studies, so far as he can do so, with pharmacy as an objective.

In the larger cities, especially, the college of pharmacy might invite the high school students to visit the institution at a time when it could be shown in full operation, and the nature of the course thus demonstrated. In this connection a lecture or discussion might be arranged with the idea of further interesting these visitors in pharmacy.

In one of the Conference schools a novel plan was carried out successfully last year. Use was made of the "help wanted" columns of the newspapers to describe briefly the advantages of pharmacy and to offer to secure situations for students. The result was surprisingly good. Only high school students were advertised for and positions were found for all who applied.

#### INDIRECT METHODS

A suitable letter sent to the principal of the high school with the request that it be read to the classes has been suggested. With the smaller high schools this might be done to advantage. A more effective presentation could be made by a local pharmacist, who no doubt could secure an opportunity to present his subject briefly to the classes. Unfortunately few pharmacists seem willing to make such an effort for the benefit of their calling, but by repeated urging, through the drug journals and the local and state associations, it might be brought about.

The argument should be made, not on the basis of learning a profitable business—though we believe that pharmacists are as a class as prosperous as men in any other of the usual vocations, but on the basis of the opportunities for service to the public and for the development of good citizenship. Hence the person selected to present the argument should himself be conspicuous as a good citizen and of acknowledged service to his community.

In the larger high schools, where the enrollment is a thousand or more, the local pharmaceutical society might endeavor to secure a special curriculum for high school students who are preparing to enter pharmacy, somewhat along the lines of the pre-medical curriculum in colleges. If from two to five per cent of the high school students elect such a curriculum, the high school authorities would no doubt be willing to maintain it. In the Chicago high schools such curricula are offered. The advantage is that it brings to the attention of the student, early in his high school course, the fact that pharmacy offers a field of sufficient importance to necessitate special preparation.

In this connection, the experiment is being made in Chicago of permitting the high school student to earn a small part of the seventeen units required for graduation, by giving him a relatively small amount of credit (not more than one unit per year) for certain work done in drug stores, and upon which he is examined by a committee appointed for the purpose by the local pharmaceutical association. Such credits have *not* yet been accepted by the University of Illinois, and the whole scheme is still in the experimental stage.

#### GENERAL PUBLICITY

Newspaper publicity is very desirable. Most newspapers give their space, more or less freely, for accounts of commencements and

college events which may be considered news, but might not be willing to give space for an argument regarding the advantages offered by pharmacy, unless this could be presented in an attractive and "newsy" manner. Dr. Newcomb, as secretary of the Minnesota Pharmaceutical Association, sent out such letters to the newspapers throughout his state. Coming from the state pharmaceutical association these no doubt received more attention than if they had come from the college directly. High school magazines, of which the number is constantly increasing, might possibly be used in the same manner. Your committee believes that this subject is of sufficient importance to justify the following recommendations:

Recommendation No. 1. Assured that pharmacists in general are deeply interested in securing properly trained clerks and in recruiting their ranks with youths of sound preliminary education, we recommend that the Secretary of this Conference present either this report or selected portions of it to the officers of the several state pharmaceutical associations, with the suggestion that it be used as a basis for discussion and action at the annual conventions next year.

Recommendation No. 2. Since the question of interesting high school students in the profession of pharmacy is fundamental, it deserves consideration quite apart from local conditions. It is therefore suggested that a special committee of this Conference be appointed, with a view to undertaking a publicity campaign whereby the case for pharmacy may be presented to best advantage to high school students, either in the form of a carefully prepared circular or by such other methods as may seem best.

Recommendation No. 3. Since there is evident need of "popularizing" the profession of pharmacy, so as to make it more attractive, it is recommended that this Conference consider the feasibility of joining with the American Pharmaceutical Association in creating a publicity bureau, one of whose functions might be to take every opportunity of pointing out in a popular way the capability of pharmacy for service to the public. Items of popular interest could be sent out by such a bureau, from time to time, through press agencies and utilized in the daily papers.

On motion of Dr. Army it was voted that the report of this special committee be received and the recommendations adopted, that the committee be continued or a new committee appointed, and that the secretary of the Conference remain a member of the committee.

There being no further business to come before the Conference at this session, it was voted to adjourn until eight o'clock in the evening.

#### SECOND SESSION—MONDAY EVENING, AUGUST 25, 1919

The meeting was called to order by the President.

The Secretary requested all delegates who had not signed the register to do so, whether they had answered the roll call or not. The Secretary also stated that he wished to report at this time as a representative from the Conference to the special committee on the proposed federation of pharmaceutical organizations, that it had been decided that it was not practicable at this time to establish the Federation of Pharmacy along the lines that were contemplated, but that the people who are interested in that question have no doubt that a publicity committee can be formed representing all interests allied with pharmacy, and that such a publicity committee can do a great deal for pharmacy as a profession, in presenting matters concerning it to the general public. The Secretary outlined the value such committees have been to the American Chemical Association and to the American Medical Association, particularly to the latter, in publishing everything of interest to them in their own journals, and then in reprints in the newspapers throughout the country. He stated that this new committee would include one member from the American Pharmaceutical Association, one from the National Association of Retail Druggists, one from the Wholesale Druggists' Association, one from the Pharmaceutical Chemists' Association, and one from each of several other organizations interested; and that all of these organizations had signified their approval of the plan and had appointed their representatives. He stated, also, that probably the expense will be great, but that an assessment will be made on each organization in proportion to what it is able to pay; that there had been a meeting in New York, on Saturday night, at which he was present, where, after a discussion as to the assessment, it was finally settled that the assessment of the Conference would probably be not more than twenty-five dollars.

He stated that the committee is to secure write-ups which would be of interest to the general public, that these would be reproduced and distributed, after receiving unanimous approval, one adverse vote being enough to stop the publication of any article, it being the intention to have them published in the trade journals and professional journals and newspapers throughout the country.

But the success of the undertaking will depend very largely on some one man who is yet to be found, for while there will be a committee to help, it will be the interest and energy of some individual which will make the project successful. The Secretary then asked the Conference to designate a representative on this committee, and to authorize the expenditure of a sum of not more than \$25 towards the expenses of the committee.

It was voted, on motion of Dr. Diner, seconded by Dr. Lowe, that this report and its recommendations be adopted.

Dr. Diner: Of course the report and the recommendations should be adopted, but I think a word or two will not be out of place. The average public, the layman generally, thinks of a pharmacy as a place where he can go to telephone or to get a postage stamp, soda water or toilet articles, and sometimes an occasional prescription. He doesn't realize that back of that occasional prescription there is a tremendous machinery of scientific work. He doesn't realize that it means research, that it means knowledge, careful study, that it means sacrifice, often lifelong sacrifice on the part of the man who has adopted pharmacy as his profession. He is to the public a mere handler of commodities. The public has yet to awaken to the fact that he is something beyond a mere accommodation store. As soon as they do that, the profession will climb up as it has in continental Europe, where for centuries it has had a place for itself. They must realize what it means to have a man who is competent as a pharmacist, as they have realized it in the case of physicians and chemists. For this reason we cannot too strenuously push the work of this committee.

Dr. Sayre: May I ask a question as to our representative on this committee? It seems to me that we are putting upon one man too much of a burden. Might it not be the Chairman of the Publicity Committee, and that committee be enlarged to say five?

The Secretary: It is understood that if the organization has a publicity committee, that our representative on the general committee will be some one from that committee, not necessarily the chairman, but some one from that committee designated by them and working with them.

Prof. Mayer: We have here a big convention meeting in New York, but so far there has been no notice of it in the New York newspapers, yet there is not a meeting of the American Chemical Society, for instance, that doesn't get a full column in the *New York Times*

especially. This is through a regular press bureau. If we hope to succeed in this, we can not do it here without a practical newspaper man taking hold of it, through some press bureau. We shall have to use money towards securing a definite press bureau. Here is a big hotel, doing everything, spending money advertising every convention that comes to it, and yet they have not had a line in the New York papers about this convention. We need some man like the one who has done the same thing for the American Chemical Society. I think this suggestion is a wonderful one and very much needed.

A paper was called for on the teaching of pharmaco-dynamics in schools of pharmacy, by Professor Washington H. Ziegler of the College of Pharmacy of the Medical College of the state of South Carolina, and Dr. Ziegler read it, as follows:

#### THE TEACHING OF PHARMACO-DYNAMICS IN SCHOOLS OF PHARMACY

By W. H. Ziegler, Phar. D.

Pharmaco-dynamics is one of the newer branches of medical science, and is being taught in the department of pharmacology in all Class A medical schools. A few of the Conference schools teach physiologic methods of assay, but none I believe offer in the two year course laboratory work in this important branch.

Practically all of the medical schools have dropped the old style *materia medica* from their curriculum. They say it is no longer necessary to burden the student with botanical origin, family history and a description of drugs that he may never see in his future practice.

They have substituted instead a course that is termed pharmacology, which includes in most schools, both recitations and laboratory work in pharmacy, toxicology and pharmaco-dynamics.

Strange as it may seem some of the schools still teach both *materia medica* and pharmacology, notwithstanding the fact that we are told that pharmacology is a new *materia medica*.

It is interesting to note the different opinions as to just what pharmacology embraces; Green, Professor of Pharmacology in the Medical Department of the University of Missouri, in his text book, defines the word as "the science which treats of the changes in the physiologic action of normal living organism, induced by chemical or physical agencies."

Cushny says that "the science of pharmacology is a development of the nineteenth century, the study up to that time being termed

materia medica, and consisting of an examination of the botanical and chemical properties of drugs along with the diseases in which they had proved of value. Pharmacognosy, he says, is not necessary, and pharmacy will probably occupy a still more subordinate position in medical education, as the tendency to include one or two drugs only in a prescription becomes more widespread.

The *Pharmaceutical Syllabus* defines the word as "the science that treats of drugs and medicines; their nature, preparation, administration and effect; including pharmacognosy, pharmaco-dynamics, therapy-dynamics, pharmaceutical chemistry and pharmacy."

Wood says that it includes materia medica, pharmacy and pharmaco-dynamics.

It is very evident then, from a review of these definitions that the professor of pharmacology in a medical school would have his hands full if he attempts to teach all that includes.

My personal opinion is that the definition given by the *Syllabus* comes nearer being correct than any of the others, for while it is often used as a synonym for pharmaco-dynamics, pharmacology has to do with all scientific study of drugs.

I have the honor of teaching both pharmacy and medical students, and have the title of Professor of Pharmacology and Materia Medica. I imagine this chair was so named because it would be the duty of the head of this department to teach the pharmacy student materia medica, and the medical student pharmacology.

We who teach in institutions where there are both schools are told that it would not be good pedagogy to teach both medical and pharmacy students at the same time. The medical student is taught pharmacy, toxicology and pharmaco-dynamics both by lecture, demonstration and laboratory work, while the pharmacy student is taught pharmacy in another department and toxicology and pharmaco-dynamics principally by lecture and recitations.

It is just here that I wish to call the attention of the Conference to the teaching of pharmaco-dynamics in our schools of pharmacy, and endeavor to show that the division materia medica, as listed in the *Syllabus*, could be revised in a way that would be of great benefit to the student.

We all must admit that the branches that make up this division are as important as any of the three that make up the outline for the two years' course for the Conference schools, and yet we know that with the exception of botany and pharmacognosy, which are featured

in most schools, the rest of the subdivisions, physiology, toxicology and pharmaco-dynamics have always been a weak spot in the pharmacy curriculum.

Physiology, which is necessary to an intelligent study of physiologic effect of drugs, is to be given in the first year, and in not less than 50 hours. This is not two hours a week for a session of eight months, and I do not believe that it is possible to even touch upon the subjects enumerated in the *Syllabus* in that time.

Physiology should be a second year study. We have tried it in the junior year, and we know from experience that it has proven the most difficult course in the whole pharmacy curriculum. We have had more conditions in this branch than in any other. Our Professor of Physiology, who is one of the ablest in the country and who teaches both medical and pharmacy classes, has told me that he believes it to be due to the fact that the pharmacy student is not as well prepared for the study as the medical student. I believe the principal cause is that the pharmacy student does not get laboratory work in this branch. Think of teaching chemistry, pharmacognosy or botany without laboratory work.

If we are to continue to list this subject we should require Conference schools to give laboratory instruction in it. It is not necessary that they be given as many hours as the medical student is, but certainly from an educational standpoint, if from no other, it is as necessary to the pharmacist as to the physician.

Practical work is equally necessary in the teaching of pharmaco-dynamics, and yet I venture to say that there are very few schools giving laboratory instruction in this branch. A great many of the schools offer a course in the physiologic methods of assay, but this course is short and does not cover the work that is necessary.

I agree with the *Syllabus* that there has been much instruction given in schools of pharmacy which could have no other effect than to encourage students in the idea that they were being prepared to counter-prescribe. Therapy-dynamics is therefore not necessary, but certainly the physiologic effect of drugs is.

In a great many schools we find an effort on the part of the professor of materia medica to cover in a course of 48 to 60 hours all of the drugs used in medicine. We know that it is impossible to give a satisfactory course in so short a time.

I have found that by confining the study to useful drugs better results are obtained. Undoubtedly there is too much repetition in the

study of pharmacy, pharmacognosy, chemistry and materia medica, the student often covering in these branches the description, botanical origin, family, dose and active constituents of a great many drugs which could be studied in the course of pharmacognosy.

It may be of interest to outline briefly the course in materia medica as given in our school. The junior student is taught in two hours a week throughout the year, inorganic and organic materia medica. The therapeutic classification is used, and he learns definitions, doses and preparations of drugs. Botany is taught as outlined in the *Syllabus*.

In the senior year he takes up the study of toxicology and pharmacodynamics. I am in the habit of drawing a large circle when first introducing the pharmacy student to this branch, which I mark pharmacology. In this circle are placed all of the studies that make up this branch. Brief definitions are given of each, stress being laid on the classification of poisons, and the factors that influence the dose of a drug.

I have found that the most satisfactory plan for studying drugs from a pharmacodynamic standpoint is to consider first all of those drugs that have as their principal effect a local action, and then all of those drugs that produce their effects after absorption.

This course is given in the laboratory, and during the study of a drug, whenever it is possible, the effect is demonstrated upon an animal. I have found that the interest of the student never lags when these demonstrations are being made, for he may learn from the lecture or text book that digitalis slows the heart and strengthens the beat, but after he has seen the normal animal heart affected by the drug, he is impressed with a truth in a way that he will never forget.

I do not know of a more effective method of teaching the common poisons and their antidotes than to have the student administer the poison to an animal, and then place the responsibility upon him of saving the animal's life. In this way he is also impressed with the fact that in all emergencies he must act quickly or not at all. Let me say that I have seen students who would stay through their dinner hour working to save an animal's life.

Undoubtedly there is too much lecturing in this branch. There should be more study of the text book—there should be laboratory work. An ideal senior course would consist of physiology lectures from the opening of the session until February; and toxicology and

pharmaco-dynamics from February to the end of the session taught by lecture, demonstration and laboratory work.

To summarize:

1. If pharmaco-dynamics is to remain a subdivision of *materia medica* in the two-year course in pharmacy schools, then laboratory exercises should be added.
2. If physiology is to be taught in pharmacy schools, the course should be increased by adding laboratory work.
3. The course in physiology should be a senior branch, and precede the course in pharmaco-dynamics.
4. A plan should be adopted by which there would not be an overlapping of the branches.

The following outline for the two-year course in the branch of *materia medica* is offered for consideration:

	1st yr. Hours	2nd. yr. Hours
Materia medica (posology, definitions).....	70	
Physiology, lectures, demonstrations and laboratory work .....		70
Pharmaco-dynamics (toxicology, physiologic assay lectures, demonstrations and laboratory).....		70
Botany: vegetable histology.....	65	
microscopical .....	65	
Pharmacognosy .....		90

Discussion followed the reading of this paper.

Dr. Lowe remarked that it seemed to him that no one could teach intelligently unless the students had a fair knowledge of physiology; that they must know something about the heart before they can be taught the action of *digitalis* on the heart.

Dr. Teeters said that his suggestion was that they have physiology and pharmacology just as they do in the medical schools; that in his school the student has physiology the first half of his sophomore year, and then pharmacology or pharmaco-dynamics; that his idea was that physiology should be a second year study, but should precede, of course, pharmaco-dynamics, and that laboratory work should be given.

Dr. Kraemer said they were indebted to Dr. Ziegler for a very interesting paper, but he was wondering whether they had considered how much anatomy was necessary in conjunction with physiology.

Dr. Lyman remarked that the student had very little anatomy, but usually had had a high school course on the human body; that what the student needs and what he does not get is the study of the fundamental biological principles, cellular physiology, not a list of the bones of the body, but knowledge of the fundamental activities of the cell. He said, "We are often misled by thinking the student must have certain courses in anatomy." He also stated that the pharmacist should be taught experimental toxicology, that that was what Dr. Ziegler was getting at when he spoke of the necessity of teaching pharmacy students toxicology by the experimental method.

Dr. Diner remarked that all these suggestions simply brought them back to fundamentals, to the question that had been formerly discussed, that they must have more and better preliminary education.

It was voted that the paper be received for publication.

The report of the Committee on Curricula and Teaching Methods, Dr. Sturmer, Chairman, was read, as follows:

#### REPORT OF COMMITTEE ON CURRICULUM AND TEACHING METHODS

##### ON CURRICULUM

Inasmuch as the committee on the *Pharmaceutical Syllabus* deals with the matters of detail pertaining to courses, our Committee has deemed it wise to limit its actions to a consideration of certain general propositions, which we are pleased at this time to bring to the attention of this meeting.

The possibilities for service by the institutions holding membership in this Conference are not limited to the conducting of the Ph. G. course and to the training of retail pharmacists, although this function will no doubt continue, in most of the schools, to demand a major portion of the time of the faculty. There is a distinct and a growing demand for chemists who have had also pharmaceutical training, and who can apply their knowledge of chemistry to the pharmaceutical industries. In planning a course for the proper training of pharmaceutical chemists we must remember, first of all, that pharmaceutical chemists must be in very fact trained chemists who can take their places with other industrial chemists, with no discredit to themselves.

The third year in the course leading to the degree of Ph. C. should, therefore, be devoted primarily to chemical branches. To

bestow this degree upon a student who has received graduate instruction in a school of pharmacy, but whose training has not been chemical, would be a clear case of misbranding, would put the recipient of the degree in a false position, and would reflect upon pharmaceutical degrees generally. A graduate student in pharmacy may have earned an additional degree, but if his course has not been primarily a chemical one, let us bestow upon him a degree which is not misleading. We are not in a position to recommend such a degree, but we feel that the Ph. C. degree should be given only to chemists. To be sure, the practical pharmaceutical chemist must have received training in certain cognate branches, also. He must have knowledge of microscopic technique; he must know something of bacteriology: and being a pharmaceutical chemist, it stands to reason that his college training shall have included the foundation courses in pharmacy, and some work along manufacturing pharmacy. But each institution should not only be permitted but should be encouraged to develop its individuality in connection with its graduate courses, for there is absolutely no reason why the Ph. C. course should be uniform throughout the Conference.

This Committee, therefore, takes particular pleasure in approving the action of the Syllabus Committee on the Ph. C. course, which action was as follows: That not less than three hundred hours of the third year be devoted to advanced analytical chemistry, not less than seventy-five hours to bacteriology, and not less than one hundred hours to advanced manufacturing pharmacy, and that micro-analysis, advanced botany, physiological testing, advanced organic chemistry, chemical technology, and urinalysis be some of the elective subjects suggested to the colleges.

There may be some reason for uniformity throughout the Conference in case of the basic course in pharmacy, as this is the preparation for the state board examinations: but there is no argument for uniformity in case of the Ph. C. course. This course should be true to name, as has been stated, and there should be a minimum standard in college hours, which was fixed by the Syllabus Committee at seven hundred and fifty. It is hoped that in course of time this standard may be raised to at least nine hundred hours.

The B. S. Course in Pharmacy: this course is presumed to constitute a liberal education in pharmacy, it might be made to contain as much chemistry as is included in the Ph. C. course, or it might be made to contain much less. Considerable latitude should be permitted

for variation, but it seems to us that in planning the four year course certain basic principles should be adhered to.

1. The four year course in pharmacy should conform, in point of instruction hours, that is, quantitatively, to the generally accepted standards for a B. S. course.

2. It should include, in addition to the professional subjects, a language and some mathematics.

3. The foundation courses in the sciences, namely, general chemistry, physics, general biology, and also general pharmacy should be scheduled in the freshman and sophomore years.

4. The course should not be top-heavy, however, with general science, and it should offer at least as good a training in pharmacy subjects as does the two year course.

5. Thesis work should be made a requirement for graduation, and hours for the laboratory work upon which the thesis is to be based should find a place in the curriculum.

#### ON TEACHING METHODS

Teaching is not an exact science. There are certain methods which may be learned, to be sure; there are certain principles which in long years of practice, have been found to be generally useful. But we have all seen extraordinary results achieved by teachers who violated all rules of pedagogics. The fact is, each teacher is a law unto himself. Although this is true, and although we can not expect to succeed by closely copying others, it is nevertheless a fact that we can improve our own work by observing the methods of others.

We are chemists, or botanists, or pharmacists, and probably golf players,—but primarily we are teachers. And if we are to have a professional program, it should deal with teaching methods. If such a program could be inaugurated, and we could meet in friendly discussion upon such topics, we should not only be reciprocally helpful, but the *esprit de corps* of the personnel of the Conference would be improved.

The matters which we debate are in the main matters of college policies, which might be denominated the business of our organization. This work is necessary and must needs be attended to. But if we want inspiration and to improve the morale of the conferences, let us stop occasionally for mental improvement in our profession, that of teaching. We should recommend this to the incoming officers.

It was voted that this report be received and printed in the *Proceedings*.

The President proposed that the Conference take up the discussion of Dr. Diner's paper, which was postponed until nine o'clock,— Shall we make a division of pharmacists and a division of the schools of pharmacy?

Dr. Sayre said that he had made his motion from a selfish view point, as he knew there were men here able to discuss this matter and he wanted to hear from them; that it did not strike him very favorably, for they might put themselves in a very unfavorable position if they recognized two sorts of colleges; that it seemed to him the ends they were endeavoring to reach could be reached by the institutions they already had; that he didn't think they should, as a Conference, put themselves on record as recognizing two grades of schools, or two grades of education for pharmacists.

Professor Rehfuß approved the establishment of two classes of pharmacists, somewhat like the pharmacist and druggist, of the old world. He said there should be a pharmaceutical chemist in a community, a man who can make analyses, an expert prescriptionist perhaps, but one capable of making analyses or tests, as there is need for such a man in all large centres or communities; but he stated that there was no need of the separation of the pharmacists in the large cities, because the higher needs of pharmacy are taken care of by the city laboratory experts. This is true in the City of New York as in all large cities, but in the smaller cities where the health departments have no laboratories, there is need of expert pharmacists. He said, "The gentleman who quoted the New York Association as having taken a step in this direction did not correctly understand that step. It was not done to elevate pharmacy, but to prevent its degradation. It had been reported to our Association that shops had been opened and called drugstores where no drugs were ever sold, simply toilet articles, patent medicines and so forth, and the Association made a move to prevent that, not to elevate the standing of pharmacy. To carry this proposal of division out, you will have to have the co-operation of all branches of pharmacy, and I do not see how you are going to get that."

The President: Any further discussion? May I add a few words? I do not see how we can ever make a new classification of existing pharmacists. The only thing which may be done is to reach the new men coming in. Tell them that they must be trained so well

that they can do the work of which we have been speaking. But it strikes me that the thing to do is to combine with the present work of the pharmacist the work of the specially trained laboratory worker. In my city we could support five or six such men.

Dr. Kebler remarked that he had hoped Dr. Hilton would be here to explain what they were trying to do in Washington to elevate the work; that they have made a study of the situation and have found that the retail druggists were not giving the public the goods called for; that various excuses had been given as to why stores were not of the proper standard or the goods called for on prescription were not supplied, such as that men were insufficient or incompetent, and that the trouble was back in the schools of pharmacy; the result has been that quite a number of men in Washington have gone out of business, because of the inadequate training of the clerks they had to employ; that he had looked forward to a school of pharmacy that would give the right kind of training to men, and that this hope was realized this past spring when the Board of Trustees decided that the time had come to begin better training, and that the result has been that the National College of Pharmacy is now a part of the George Washington University, with the distinct understanding that the course given should be a full academic B. S. degree in pharmacy; that he did not know how it would work out, but that he believed they had taken a step in the right direction.

The President: The report of the Committee on Research was referred to Dr. Kraemer for consultation with his colleagues. Is there anything to report at this time?

Dr. Arny: I think it is a deadlock. Dr. Kraemer has succeeded in getting a majority of the committee to sign, so let the report go in but let my opposition to it also go in as a part of the *Proceedings*, for what I said yesterday should go on record as a minority report.

Dr. Kraemer: My position is simply this, gentlemen. I am not asking the Conference to approve anything. I am simply giving you a summary of what has been proposed. There is one paragraph which can be eliminated, if you wish.

Dr. Arny: I object very strenuously to everything in it, the report will go over my objection. Naturally I recognize that the majority rules, and that Dr. Kraemer has been able to get a majority to sign that report.

The President: Isn't it possible to compromise in this matter without taking up the whole time of the Conference?

Dr. Anderson: Is there any use in wasting the time of the Conference on this any further? A majority and a minority report have been handed in. The only difference is that Dr. Kraemer rather implies that we approve of this institute, while Dr. Army on the other hand claims that we should not approve of it. As we know nothing about it yet, I move that we receive both reports and publish them.

Dr. Kraemer: I did not present a report favoring this institute. I simply presented the facts, gathered from the journals, as to what had been done concerning it. There is one paragraph, it is true, which I shall now strike out.

Dr. Anderson's motion, seconded by Dr. Clark, was carried.

The President announced that the reports of the Committee on Examination Questions and of the Committee on the Relations of the Colleges with the Boards of Pharmacy were to be presented at the joint meeting of the Conference with the Association of Boards of Pharmacy, but would be included in the Conference Proceedings at this place, as having been read by title.

#### REPORT OF THE COMMITTEE ON EXAMINATION QUESTIONS

Edsel A. Ruddiman, Chairman

At the beginning of this year, reorganization of the Committee on Examination Questions seemed advisable, so as to make the chairmen of the sub-committees members of the general committee, and the members of the general committee chairmen of the sub-committees. It was expected by this arrangement that the general committee would act as a council to decide on the details of the work and to sum up the work of the sub-committees. As a matter of fact it has not been carried out as well as was hoped for, due partly to the strenuous times through which we have been passing.

If this committee is to be continued, it would seem advisable to retain the chairmen of the sub-committees. Two of these chairmen report that they are now in shape to do some constructive work.

This year the chairmen of the sub-committees were asked to select their own committees, choosing particularly those who have taken some interest in the work in the past.

These chairmen are:

1. Pharmacy and Dispensing, C. A. Dye.
2. Physiology and Pharmacology, P. S. Pittinger.
3. Botany and Pharmacognosy, E. L. Newcomb.

4. Commercial and Legal Pharmacy, C. O. Lee.
5. Bacteriology and Immunology, E. N. Gathercoal.
6. Physics and Chemistry, A. H. Clark.

Professor Henry Kraemer is also on the general committee.

The report of the work accomplished by the committee last year was not available until the receipt of the June number of the Journal of the American Pharmaceutical Association, and then only in an abbreviated form and without discussions. Necessarily this condition placed the committee this year at a disadvantage.

So far as I know the questions gathered last year have never been printed, and probably no one outside of the members of the general committee ever saw them. It seems to me that this was an error and that much of the good hoped for was lost. I know that I have received many suggestions from reading these questions, as points have been brought out not thought of before. It has given a better insight into the work given by different schools than could otherwise be obtained. Probably what holds true for me in this regard, also holds true for others.

It is a question in my mind whether this committee should be continued as the committee of the joint meeting of the Boards and the schools. As the Association of Boards has not appointed such a committee, it would indicate that the Association deems the work finished, in which case the report of the work which the committee appointed by the Conference makes, should come before the Conference and not before the joint meeting. The Chairman feels that so far as the Conference is concerned the committee might be continued for another year, to finish up work which is not complete.

The Chairman thinks also that there is still good to be worked out by this committee along the line suggested last year, which was that the instructors send to the Chairman questions which are actually asked in examination, that these be classified and a copy of all questions be returned to each member of the committee for study and comment, discussing whether they are good or bad, whether they should be asked or not, and giving the reason for the conclusion. There have been collected a large number of questions which could be used. If the committee is to be continued, some provision should be made for the printing and distribution of the questions.

Without some means at hand for distributing questions, the Chairman felt this year that it would be a waste of energy to compile

more questions, and in his letters to the members of the committee he asked for a discussion of the fundamentals upon which all teachers should lay stress, as well as for a discussion of questions. If we can get greater uniformity in the work given, we can get greater uniformity in questions asked.

The reports of the chairmen of the sub-committees were received so late that no attempt was made to work them into a composite whole, so I shall ask that each chairman give the summary of his report.

#### **REPORT OF THE SUB-COMMITTEE ON PHARMACY AND DISPENSING**

**Clair A. Dye, Chairman**

As a member of the Committee on Examination Questions I was asked by the Chairman, Professor Ruddiman, to act as Sub-Chairman of this Section and report on the work of the year and especially of certain features of the work. As co-workers and advisers, some fifteen members, representatives from various schools and interested in this branch of pharmacy, volunteered or were requested to assist in the work.

In accordance with the plans of the general Chairman a questionnaire was sent to these advisory members, and to a number of teachers of the subject, for the purpose of obtaining suggestions that would be helpful to your Chairman in preparing a report.

The questions included were formulated from a group suggested by the general Chairman, Professor Ruddiman, and were as follows:

1. What features of the subject of Pharmacy and Dispensing do you consider as fundamental? That is, what points do you think every school should teach?
2. State briefly how the subject is taught in your school. We are aware that the answer to this question may seem next to impossible in a brief statement, but what we should like to have is a general statement of the plan followed in your school.
3. What suggestions do you have to offer, regarding any feature of the subject, which you feel will be of mutual help to the members.
4. Suggestions as to subjects which you feel should be discussed before the Conference.

5. If convenient, will you kindly furnish one or more lists of examination questions used during the past year. The object of these lists is to obtain a general idea of the scope of the work covered.

As anticipated, the replies received were very largely from the enthusiasts on the subject, who consequently expressed themselves freely. It is therefore rather difficult to collate the information received and bring it within the scope of a sub-committee's report. But in order to give some idea of the opinions expressed by the various collaborators it may not be out of place to quote extracts from some of the replies received.

One says, "I believe every one will agree that the work laid down in the standard text-books on pharmacy outline the subjects necessary to be taught in colleges. This should be done by lectures explanatory of and elaboration on the text-book subjects. Lectures should be followed by laboratory exercises by the student under supervision of a competent instructor. These should be followed by recitation and at least once a month by a written examination."

Another, commenting on the general methods of procedure in teaching pharmacy, says "the subject is presented to the class at a preliminary session and if any new manipulative methods are introduced these are demonstrated by the instructor. The students then proceed to the laboratory and carry out the operations outlined for the lesson under the supervision of the director in charge. Preparations are reported on, upon special blanks and samples are graded. The following period a quiz is given covering the work of the previous session. About once a month a written examination is given covering the work thus far studied."

Several expressed the belief that general methods should be thoroughly understood and the memorizing of formulas and detailed methods should be discouraged. After commenting at some length upon the general principle just mentioned one says "technique should be carefully taught by actual demonstrations on the part of the instructor, so that a student may form intelligent and efficient habits of work, and be able to go about the filling of prescriptions and other duties without the loss of time and energy."

Another's opinion was that "the instructor should insist upon the student's understanding the reason for each step in any process and be able to explain the reasons for any changes taking place. Teachers

should be present in the laboratory, not only to assist, but also to keep the students interested in what they are doing, avoiding always the mechanical following of directions."

From another comes the comment that "the subject should be developed by lectures, quizzes and closely coordinated laboratory work, the ultimate object being not the mere acquisition of facts, but the cultivation of a scientific habit of mind."

A number are of the opinion that if the subject were developed along the lines suggested by the *Syllabus* that the work would be well covered, and with proper supervision the students would obtain a thorough grasp of the subject.

It was thought by some that, in teaching practical pharmacy and dispensing, the teachers should not lose sight of the fact that the ultimate objects should be to teach and train the student for actual drug store service.

From one comes the suggestion that the course and instruction should be developed by daily lectures, a large number of written examinations, extensive laboratory experimentation and incessant oral quizzing, coupled with a close personal survey of the students' work.

These comments and suggestions might be continued at some length, but enough have been given to show the attitude of a number of teachers on the subject. For the most part the schools reporting follow the same general plan in developing the courses in pharmacy. In general this is based upon the general consideration and history of the U. S. P. and the N. F., and standard pharmaceutical literature, texts and commentaries.

This is followed by the study of the various types and forms of weighing apparatus and care of same, weights and measures, specific gravity, percentage solutions, general theories and processes involved in carrying on most pharmaceutical processes. The general discussion may be accompanied by laboratory exercises involving these general methods and principles. The foregoing work is then supplemented by a study of the various classes of preparations, accompanied by a more or less extended laboratory course in which types of the various classes of preparations are made. In fact we are of the opinion, judging from the statements of most of the schools reporting and from a study of a large number of the courses listed in the college bulletins, that the subject, as outlined in the *Syllabus*, is quite generally followed by most of the schools.

It is to be expected that the schools may vary somewhat in the

order and method of presenting the subject, depending upon the individuality and experience of the teacher in charge, and we feel that this is as it should be. In doing this, however, individuality and decided opinions of the instructor should not be permitted to go contrary, to an unlimited extent, to established customs and good teaching methods. In our zeal to develop an extended laboratory course, or something different from what other schools do, we should not overlook the fact that general theories are fundamental to the proper understanding, on the part of the student, of the various processes upon which our laboratory courses and other features of instruction are developed. As one of the collaborators expresses it, "we should impress the student at every turn that every manipulation or process which is involved, is an illustration of one or more of the fundamentals taught in theoretical pharmacy." This we feel applies, not only to the general theories upon which pharmaceutical processes are based, but especially to the general theories of chemistry as well. From my own point of view, I do not see how a student can understand discussions on pharmaceutical processes, preparations and combinations, and be expected to intelligently criticise incompatibles in prescriptions, without a thorough knowledge of some of the fundamental theories upon which these are based. Our claims to rank as successful schools should be based upon, not the great number of subjects we teach, but upon how well we teach them.

The question of teaching pharmaceutical arithmetic, in connection with practical pharmacy, or at least the importance of the subject and its relationship to theoretical and practical pharmacy, received its share of comments. Most of those reporting referred to the importance of a thorough drill in this subject, and its importance in the preparation of percentage and standard solutions and the development of pharmaceutical formulas. We are sure that those of us who have had much experience in teaching pharmacy give more thought to the teaching of this subject than to most any other. We hope that some one will soon present a paper on the subject and explain why it is such a stumbling block to most students. This, however, we assume is not germane to the question before us, so we shall not discuss it further.

Coming next to the subject of dispensing and prescription practice, we should infer, from a study of the reports, that it is highly developed and in many instances carried on in a very practical manner. The methods followed in studying the prescription differ some-

what in the various schools, but while they do, the results attained come close to a common goal. Whether the prescription should be discussed primarily under the subject of dispensing, or the fundamentals upon which it is based, or should form a part of the course in pharmaceutical or prescription Latin, we presume is a debatable question. We are of the opinion that if the student is to study the words, terms and phrases used in writing prescriptions he should get his fundamentals along with the general study of the construction of the prescription. Having mastered these, the subject is of more interest and has more of a practical appeal when the question is again touched upon in the course in dispensing. Most of us, however, are no doubt persuaded that our own plan of presenting the subject is the best.

The subject of dispensing is the one that appeals most strongly to the student, since he feels that he is at last doing something practical and worth while, and this subject is highly developed in most schools, as stated before.

In quoting again from the various reports received, relative to this feature of the discussion, we find this statement of the manner in which the subject is taught: "All our prescriptions are carefully checked and graded by us as to accuracy of ingredients, as shown by the stock bottles used. Along with this we emphasize the importance of neatness, general appearance, position of the label, and character of the finished product, and we grade upon these features. Consideration is also given to the writing of directions, the Latin words and terms and abbreviations used. The pricing of the prescription forms an important part of the practice, and we insist upon every student's familiarizing himself with and using the N. A. R. D. price schedule for every prescription filled. Incompatibles are given extended consideration from every angle. In some of the dispensing we place students in the position of managers, and they must personally check some of the prescriptions and rate the work. We have found this view point particularly valuable, as it places the student in the position of critic and enables him to see the work of other students from the point of a manager."

From another we have the statement that "dispensing should be taught by having the students read and comment on *bona fide* prescriptions. Typical prescriptions should be compounded by students and dispensed exactly as is done in a store."

One states "our senior students have access to the College Free

Dispensary where they get excellent training in actual prescription practice. During the session each senior shall compound and dispense not less than five hundred prescriptions, which are of great variety both in the nature of the ingredients prescribed and from the form of combination directed."

Others report that their course in practical dispensing is given under directions of the pharmacy department, in the University Hospital Dispensary, or, as is the case in other schools, in the free dispensary of hospitals under control of the college. In some instances the students work under the observation of the Dispenser who is responsible to the school. As one collaborator states "the students work in the dispensary under close personal supervision. Recitations form a part of the work and all the special tricks in compounding and dispensing, that are not brought out in their regular laboratory work, we aim to teach here." Of the practical value of such a varied experience under the personal supervision and guidance of an experienced dispenser there can be no question.

On the other hand, some of the schools which do not have such advantages report a most elaborate system of dispensing where every effort is made to give work as nearly under normal store conditions as possible. Every effort is made to furnish the best of materials and every detail of the practice is carefully supervised.

Quite a number submitted copies of the prescriptions used in teaching and demonstration and laboratory practice, and explained in some detail the methods followed in teaching the subject. These prescriptions were, in general, typical of the prescriptions met with in the average store practice and should form an excellent basis upon which to build the course of instruction.

All those commenting on the methods employed in presenting the subject emphasized the importance of looking after and seeing that all the minute details were carried out and understood. The student should understand and be able to explain the reasons for this or that step in the procedure and the theories underlying the subject. Practical examinations were urged by most of those commenting on the subject.

While we had a few responses to the request for lists of examination questions, these were not general enough to warrant our attempting to study them in much detail, or to reproduce them here. We have gone over the few we received and find that, for the most part, they are good, fair and reasonable questions, questions that

seem to be based on good pedagogic principles and well calculated to test a student's grasp of a subject in a very comprehensive way. They appear also to be practical questions such as one would expect to find, and not special questions prepared for show or to give the impression that the students were all pharmaceutical prodigies.

Lastly, a number of suggestions were made relative to subjects which might be profitably discussed in the Conference. Some of these are in the form of question all of which we present for your consideration.

1. Is it possible to get the same degree of studiousness without examinations?
2. How can examinations be kept to a very small number and still keep the students hard at work?
3. How can one prevent cramming just before examinations?
4. How much of the actual formula of pharmaceutical preparations should the student be required to learn?
5. Should students of pharmacy be required to acquaint themselves with the proprietary preparations that are on the market before they are registered?
6. Would not a general discussion of laboratory methods of teaching prove helpful?
7. What should be the scope of a proper laboratory course to accompany lectures on theoretical pharmacy?

#### **SUB-COMMITTEE ON PHYSIOLOGY AND PHARMACOLOGY**

**Paul S. Pittenger, Chairman**

We beg to report that the Sub-Committee on Physiology and Pharmacology was slow in getting started this year, owing to the fact that the unprecedented demand upon our laboratories for medical supplies, as a result of the war, and the serious crippling of many of our departments resulting from the service draft and the influenza epidemic, made it physically impossible for the Chairman to give any attention to the work of the various committees of which he is chairman.

We have, however, accomplished something. A committee was appointed consisting of the following men:

H. S. Brown, Univ. Oklahoma, Norman, Okla.  
R. A. Lyman, Univ. Nebraska, Lincoln, Neb.  
Ralph Hopkins, Univ. Tulane, New Orleans, La.

O. W. Bethea, Univ. Tulane, New Orleans, La.  
 J. T. Halsey, Univ. Tulane, New Orleans, La.  
 S. P. Miller, S. Dak. Agr. Col. & M. A., Brookings, S. D.  
 H. B. Carey, Univ. California, San Francisco, Cal.  
 Albert Schneider, Univ. California, San Francisco, Cal.  
 A. D. Moulielous, New Orleans Col. Pharm., New Orleans.  
 L. K. Darbaker, Pittsburg Col. Pharm., Pittsburg, Pa.  
 F. Powers, Univ. Notre Dame, Notre Dame, Ind.  
 W. H. Ziegler, Med. Col. State of S. C., Charleston, S. C.  
 W. F. Gidley, Purdue Univ., Lafayette, Ind.  
 H. F. Gerald, Creighton Univ., Omaha, Neb.  
 Eli H. Long, Buffalo Col. Pharm., Buffalo, N. Y.  
 J. L. Lester, Meharry Pharm. Col., Nashville, Tenn.  
 L. E. Hastings, Baylor Univ., Dallas, Tex.  
 H. C. Hausegen, Louisville Col. Pharm., Louisville, Ky.  
 J. T. McClintock, State Univ. Iowa, Iowa City, Ia.  
 C. S. Chase, State Univ. Iowa, Iowa City, Ia.  
 Bernard Fanus, Univ. Illinois, Chicago, Ill.  
 Paul S. Pittenger, Chairman, Phila. Col. of Pharmacy, Phila., Pa.

As the subject of physiology was fully covered by the Committee in last year's report, it was suggested that we consider this year more particularly pharmacology and biologic assaying. With this suggestion in view, the chairman wrote to the members of the committee for an expression of their opinion and answers to the following questions:

1. To what extent these subjects are now being taught in colleges of pharmacy.
2. To what extent they ought to be taught.
3. To what extent they can be taught.
4. How much work should be included in
  - (a) The two year course.
  - (b) The three year course.
  - (c) The four year course.
5. Suggestions as to how they may be taught.

In addition to the above, the chairman asked for the following information from each member:

- (a) How are the subjects taught in your institution?
- (b) What methods of teaching or other features do you employ which would be of mutual benefit?

- (c) What do you consider the fundamentals—the things which any college ought to teach?
- (d) List of the questions which you have recently used for the term or final examination in pharmacology and biologic assaying, together with any comments as to which you may consider the most important.

The chairman has received replies to date from only eight members of the Committee and must therefore base his conclusions upon the opinions of these eight members, instead of upon the opinion of the Committee as a whole.

He has, therefore, compiled from the communications received the following answers to the questions above:

**1. TO WHAT EXTENT THESE SUBJECTS ARE BEING TAUGHT IN COLLEGES OF PHARMACY**

As far as the committee has been able to determine, pharmacology and biologic assaying are taught at the present time in the eight following colleges of pharmacy: University of Iowa, University of Illinois, Louisville College of Pharmacy, University of Notre Dame, University of Nebraska, University of Oklahoma, Philadelphia College of Pharmacy, and the Medical College of the State of South Carolina, School of Pharmacy.

The amount of time devoted to these subjects by these institutions ranges from "very little" to 15 hours in the two-year course, from 15 to 75 hours in the three year course, and 108 hours in the four year course.

**2. TO WHAT EXTENT THEY OUGHT TO BE TAUGHT**

It is the general opinion that the two year course should include a series of lectures and demonstrations, merely sufficient to enable the student to intelligently understand what is meant when matters of drug action and drug uses are discussed. The course should also give the students a good general idea of the biologic methods employed for testing the drugs which cannot be tested chemically.

The lectures should cover the whole subject in general, while the table demonstrations on living animals will acquaint the students with the apparatus and methods used at the present time in this work, and will supply the necessary foundation for carrying out the more simple tests after a little practice.

The three and four year courses should include sufficient laboratory practice and personal instruction in technique, handling and operating on animals, construction and handling of various kinds of apparatus, and actual experience in standardization work, to enable the student to accept positions in pharmacodynamic laboratories.

### **3. TO WHAT EXTENT THEY CAN BE TAUGHT**

This question is answered by No. 2, as the committee is of the opinion that it is useless to institute courses of any less work.

### **4. HOW MUCH WORK SHOULD BE INCLUDED**

- (a) In the two year course: Twelve to fifteen hours, lectures and table demonstrations on animals covering the whole subject in general.
- (b) In the three year course: Forty-five to sixty hours of laboratory work.
- (c) In the four year course: This course should contain as much in excess of sixty hours of lecture and laboratory work as possible, and should be so elastic that a student would be able to specialize along any line desired.

### **5. SUGGESTIONS AS TO HOW THEY MAY BE TAUGHT**

- (a) General scope of pharmacology, biologic assaying and the specific action of drugs (lectures).
- (b) Pharmacology of the most important drugs including those which cannot be tested chemically with laboratory studies on animals.

Each drug, or class of drugs, should be treated as follows:

- (1) As to their principal actions. (2) As to the methods of recording these actions. (3) As to the actions best adapted to standardization purposes. (4) As to the principal methods and the apparatus employed for biologic standardization purposes.

The list attached of questions on pharmacology and biologic assaying in no way represents the ideas of the whole Committee, as the chairman has received only one set of questions on pharmacology and has compiled the questions on biologic assaying from examinations which he has given to his own students during the past several years.

#### SAMPLE LIST OF QUESTIONS ON PHARMACOLOGY

1. What are hypnotics? Where and how do they act?
2. What are anaesthetics? How may they be divided? Discuss the mode of action of each class.
3. What would seem to be the best classification of anodynes? Name a few drugs you would specially place in such a group.
4. What two prominent fixed oils are readily soluble in alcohol?
5. Compare, as to action upon
  - (a) the *eye*, (b) the *heart*, (c) the *lungs*, and (d) the *glands* of the *mouth* and *skin*, the following:
    1. Atropine.
    2. Pilocarpine.
    3. Morphine.

#### BIOLOGIC ASSAYING

1. Define pharmacology, pharmacognosy, pharmacy, pharmacodynamics, therapydynamics.
2. Explain difference between assaying and standardization. Definition of physiologic standardization.
3. Give the five important steps in the history of standardization.
4. State briefly what you can of the variation in crude drugs and in non-standardization preparations.
5. Is it necessary to standardize crude drugs? Give reasons for your answer.
6. Can standardized tinctures or fluid extracts be made from the percolation of standardized drugs? Give reasons for your answer.
7. Why is it necessary to physiologically standardize some drugs and not others? How are *most* drugs and chemicals standardized?
8. Tell all you can about drug deterioration.
  - (a) What class of drugs give preparations which are practically permanent?
  - (b) Name several drugs in which deterioration takes place rapidly.

9. Name three principal causes of drug deterioration. Which is the most important? How can deterioration be prevented?
10. Give the three principal *type* methods available for biologic standardization. Give at least two examples of each.
11. Name five important drugs which act as cardiac stimulants: three which act as depressants.
12. (a) Describe the action of the digitalis group upon the frog's heart.  
(b) Upon the blood-pressure.
13. (a) Give detailed outline of Reed & Vanderkleed's guinea-pig method.  
(b) "One-hour" frog method.
14. (a) Name and describe apparatus necessary for blood-pressure tests.  
(b) Tell what you can about the following:
  1. Anæsthetics which may be employed for B. P. work.
  2. Describe method of giving injections.
  3. Animals which may be employed.
15. Give a detailed description of the method for standardizing epinephrin and adrenal ext. Give reasons for using almost the maximum rise for the standard of comparison.
16. In standardizing epinephrin, why are the percentage strengths calculated from the doses required to produce similar rises rather than from the rises produced by similar injections?
17. (a) Name the three principal methods available for the physiologic standardization of ergot.  
(b) Give detailed description of the B. P. method.
18. Explain the principal difference between the B. P. method for ergot and that for epinephrin.
19. (a) Describe the cock's comb method for standardizing ergot.  
(b) Give principal objections to this method.
20. (a) Give the three stages of the action of cannabis.

- (b) Describe in detail the method for standardizing cannabis.
- 21. (a) Describe isolated uterus method of standardizing pituitary extract.
- (b) Why is the blood-pressure method unsatisfactory for testing pituitary extract?

#### **SUB-COMMITTEE ON BOTANY AND PHARMACOGNOSY**

**Edwin L. Newcomb, Chairman**

This is a report of progress. The members of this section have given considerable thought to the work before us during the past year. It has seemed desirable that we should first attempt to arrive at some agreement on what the fundamentally important subdivisions of our work are generally held to be. Following this we hope to present to the Conference and Boards some type questions on the fundamentals of botany and pharmacognosy.

We have prepared and distributed to all Conference colleges a questionnaire entitled: "Data to be Used in an Attempt to Bring About Greater Uniformity in what may be Considered as Fundamentals in Botanical and Pharmacognostical Instruction for Pharmaceutical Students." In this question sheet the subjects, botany and pharmacognosy are presented under twenty subdivisions. Each college has been requested to give for each subdivision the following information: 1. Time and work is given by quarter, semester and year. 2. The number of lecture hours. 3. The number of laboratory hours. 4. The relative importance held for each of the divisions. 5. Method of treatment and illustrative laboratory material used.

The kind and nature of examination questions is no doubt largely determined by the method of treatment and importance held for each subdivision. Variation in illustrative material should not greatly alter questions dealing with fundamental principles, still it is believed that a judicious selection will enable the teacher to write better fundamental questions.

At the present time more or less complete reports have been submitted by sixteen colleges of pharmacy. A partial summary of the reports thus far received has been prepared. There is the widest variation in the character of present botanical and pharmacognostical teaching but at the same time there are certain phases of the work which we practically all hold—as fundamental and essential.

The results of this preliminary compilation indicate that the completion of the work as laid out will be very fruitful and enable the Conference to agree almost unanimously upon certain phases of this branch of pharmacy which should be emphasized and about which teachers and board members should ask questions. It is suggested therefore that the work of this committee be continued and that following the completion of the questionnaire study that type questions on the parts of the work held most important and fundamental be brought together.

The Mimeographed Topics and Suggestions for Discussion by Members of the Sub-Committee on Botany and Pharmacognosy were published in the A. Ph. A. Journal, pp. 498-500 June 1919. This material of the committee and a number of the discussions will be offered as a part of this report. (Professor Newcomb here gave a brief summary of replies to the question sheets submitted by sixteen colleges, requesting that publication be withheld until the next meeting at which time he hoped to have practically all of the replies in hand. He stated that members of the committee had prepared discussions on certain phases of teaching botany and pharmacognosy, and that he would like to have the remaining time given to these members that they might present their discussion and the following papers were presented.)

#### THE VALUE OF PHARMACOGNOSY

By Lucius E. Sayre

The value of pharmacognosy in its many phases of application is not, unfortunately, appreciated by the average druggist. Indeed, it must be admitted that only a very small percentage of drug stores, into which our trained students enter, have occasion to apply, practically, the instruction and training of the microscopical laboratory.

However, the value of this instruction to students who serve in average drug stores is not to be appraised wholly from their practical application of it. The primary object of pharmacognosy, we all know, is to enable one to recognize drugs, to determine their quality, to detect their adulteration, and, to this end, to distinguish the characteristic elements or tissues of both the drug itself and its possible adulterants. To obtain the necessary skill to do this it is well understood that a systematic course is necessary, some phases of which are preliminary—the development of different organs of the plants, their

changes in growth, and the relation of orders or families, genera and species, for example. Directly applicable to the skill needed today is a higher and subsequent study of histological elements necessary to the identification of powdered drugs—where gross characteristics have disappeared in the process of powdering. The instruction necessary to comprehend this important phase of pharmaceutical practice every student of pharmacy should have, if he wishes to lay claim to the title of pharmacist.

Formerly it was considered sufficient for the pharmacist to be familiar with gross characteristics only, or those brought out by the simple lens magnifying 10 or 15 diameters, but this method, while still important, has become inadequate because of the new factor, the drug miller, whose service we most heartily welcome. The instruction in gross characteristics we may say, in passing, should be given as preliminary to the higher work in lecture and laboratory about equally divided. Pharmacy students in *materia medica* are shown specimens on the lecture table, and in the laboratory a closer study of identification is given.

As before suggested, the drug miller has made all the more important microscopical study of tissues for the purpose of identification of drugs in the pulverized form. This is the preliminary part of standardization, and careful standardization of fewer drugs of recognized value is coming to be the demand for the up-to-date pharmacist, a pharmacist worthy of recognition by the public and by the sister profession — medicine.

It is true, and to be deplored, that there are pharmacists of today, pharmacists of good intentions who have the upper hand in commercialism, who give little incentive to teachers and to those who receive instruction in this important subject. They contribute nothing to its development and beat the heads of those who try to accomplish something along the line of higher training in pharmacy. But as instructors we are not discouraged, for we know the value of this training and our duty lies in maintaining and developing it.

Boards of Pharmacy should at least insist that the instruction of candidates for reciprocal registration should be equal to the highest requirements found in any of the States of the Union.

Discussion by Heber W. Youngken

To consider plants in the order of their phylogenetic development, passing from the simplest forms to others becoming more and

more complex in structure and function, has for many years been recognized as a scientific and logical method of presenting the subject of systematic botany. It appears to have many followers among teachers of pharmaceutical botany and pharmacognosy.

An important argument in its favor is the fact that the students are constantly confronted with evidences of evolution as shown by morphology, embryology and physiology. In the second place, there are abundantly introduced through this method the factors of resemblance and contrast. Generally the flash of contrast and probably always the flash of resemblance in consciousness is an agreeable stimulus. The students, therefore, become contented and so happy with their task.

Moreover, it is a well known pedagogic law that a new object of study, in order to excite interest in the learner, must have two apparently opposite characteristics. It must have some degree of familiarity, must bear some resemblance to one or more known things, must have some points by which it can, without too much difficulty, be attached to the present content of the mind. The consideration of a plant or group of plants entirely new, especially if it be very unusual, seems to repel and partially paralyze the mind of students. The impression felt is painful. While entire strangeness should be avoided, the plant or group taken up should possess something of novelty: With its likeness there should be a measure of unlikeness.

In this respect the consideration of plants in order of their increasing complexity excels any other method, for it embodies the constant attachment of newer structures to others in the learner's mind resembling them, and further, the points whereby these can be attached to the present content of his mind are gradually evolved ones, rather than difficult leaps: the interest of the learner is thereby naturally kept alert.

This is undoubtedly the most scientific and logical method, and therefore is the ideal method. But in practice we cannot become too idealistic. We must consider our audience. This, in the average college of pharmacy, consists of an assemblage of students having varying degrees of preparation. The vast majority have had little or no experience in the use of the microscope. Moreover, they have the professional or business viewpoint rather than the cultural one.

Observation and experience have shown me that to start such students with the lowest plants, namely the bacteria and blue green

algae is inexpedient, for not only is precious time lost, but the objects, being so small, are not readily found by the novice and this frequently disheartens him. The beginner should be encouraged rather than disheartened. The best means of encouragement is to provide him with material which he can readily find, when prepared for microscopic examination. In this relation some teachers have used hair, others insects, still others anacharis. There is no scarcity of objects that might be selected, large enough to be readily found.

I have found the interest of the average pharmacy student materially heightened if some plant of medicinal value is taken up at this time, and for this purpose. *Dryopteris marginalis* seems especially valuable, for not only does it hold the student's interest because of its economic value, but since it represents a medium type of plant, it gives the beginner a working knowledge of structures and functions, the homologies and analogies of which will be met in the later study of forms of lower and higher domain. Upon the completion of this preliminary study, I find it desirable to take up the simplest organisms and pass to those of gradually increasing complexity, using wherever available drug and economic plant material.

If pharmacognosy is taught to second year students, who have first had a foundation in structural and systematic botany, then, I deem it the proper and scientific method to begin with the drugs of the lowest group and lead on to others obtained from groups of higher evolutionary standing until those from the compositae shall have been discussed.

#### Question No. 19:

Is the study of the structure of plants along with outer morphology the best plan?

This question I interpret to mean, "Is it the best plan to study the inner structure of plants along with their outer structure? In this connection I might state that I have tried both plans and have made these observations:

1. That students are apt to confuse in their minds the histology of one organ, such as a root, with that of a stem, or another like a fruit with a seed, or a dorsoventral leaf blade with a bifacial one, if the inner structure of the plant part is not taken up along with its outer morphology.

2. That the thoughts relating to the outer morphology of a

plant organ are intensified, if facts of its inner morphology are presented along with them.

3. That the number of illustrations employed in the consideration of outer morphology necessarily exceeds those used to illustrate internal structure.

Bearing all of these observations in mind, it would seem logical to conclude that superior results might be expected if intensive instruction were given on both outer and inner structure of selected types of plant organs, correlating the facts pertaining to the inner with those of the outer morphology of the particular organ considered, reserving for complementary consideration the scheduled balance of instruction in outer morphology.

#### ILLUSTRATIVE MATERIAL FOR LABORATORY INSTRUCTION IN OUTER MORPHOLOGY

##### *Root.*

Root system of *zea mays*.  
Root system of California privet.  
Root system of a legume (for tubercle).  
Sarsaparilla.  
Turnip  
Parsnip.  
Seneca.  
Dodder,  
Tuberous roots: aconite and jalap.

##### *Stem.*

###### Underground:

Rhizome: *podophyllum*, *aspidium*, *valerian*.  
Bulb: onion, squill, lily.  
Corm: *colchicum*, jack-in-the-pulpit.  
Tuber: potato.

Aerial: corn, horsechestnut, grape, peppermint, honey, locust, dodder, prickly ash, asparagus, cactus, *aristolochia siphon*.

##### *Leaf.*

###### Outlines.

*Linaria*—linear.  
Long buchu—lanceolate.  
Boldo—ovate.  
Pear—elliptical.

###### Apex.

*Eriodictyon*—acute  
Coffee and eucalyptus—acuminate.  
Long buchu—obtuse.



*Venation of leaves.*

Parallel—corn, veratrum.  
Primate—calla, lily, oak.  
Primate reticulate—digitales.  
Furchate—fern.  
Palmate—sweet gum, maple.  
Anastomosing—eucalyptus.

*Flowers:* lily, orange, cherry, clove, bellad, digitalis.

Heads of flowers: Marigold, cutawry, chicory, matricaria.

*Fruits*

Follicle—larkspur.  
Legume—pea.  
Capsule—cardamo, vanilla.  
Pyxis—hyoscyamus.  
Siliqua—chelidonium.  
Silicule—shepherd's purse.  
Nutlets—peppermint.  
Cremocarp—anise, fennel.  
Hesperidium—orange.  
Pome—apple.  
Etaerio—blackberry.  
Syconium—fig.  
Sorosia—mulberry.  
Strobile—hop, pinus.  
Samara—ash, maple.  
Lomentum—cassia fistula.

Akene—dandelion.  
Utricle—chenopodium.  
Coryopsis—barley, wheat.  
Nut—oak, acorn.  
Berry—capsicum, bellad.  
Pepo—pumpkin.  
Durpe—sabal, rhus, cocoanut, etc.

*Seeds.*

Albuminous—nux vomica, car-  
damon.  
Exalbuminous—lima bean, nut-  
meg (for arillode), castor oil  
(for caruncle).  
Physostigma for raphe.  
Strophanthus for awn.  
Asclepias for coma.

**3. ILLUSTRATIVE MATERIAL MOST SUITABLE FOR STUDY OF INNER  
STRUCTURE:**

*Root.*

Fern—aspidium.  
Monocotyl—sarsaparilla.  
Dicotyl—California privet, aco-  
nite, poke.

*Stem.*

Fern—aspidium.  
Monocotyl—zea, triticum, con-  
vallaria.  
Dicotyl—aristolochia, siphocur-  
bita, pepo, linden, gel-  
semium, cascara.

*Leaf.*

Tradescantia, senna, eucalyp-  
tus, pilocarpus, pine, sedum.

*Flower.*

Lily, calendula, clove, crocus,  
carthamus.

*Fruit.*

Vanilla, fennel, cubeb.

*Seed.*

Corn, castor oil, lima bean, nux  
vomica.

#### QUESTIONS ON OUTER MORPHOLOGY

- I. Define the following terms referable to roots: (a) adventitious, (b) crown, (c) tap root, (d) keel, (e) tubercles.
- II. (a) How does a corm differ from a bulb? Give a drug example of each. (b) How does a rhizome differ from a root? Give a drug example of each.
- III. Describe the aerial portion of the sporophyte plant of *dryopteris marginalis*.
- IV. Define the following terms referable to stems: (a) suffruticose, (b) herbaceous, (c) repent, (d) exogenous, (e) phylloid.
- V. Describe in detail the leaf given you. State whether simple or compound, stipulate or exstipulate, nature of venation, outline, texture, apex, base, margin and surface (upper and lower).
- VI. Define the following terms referable to leaves and give an example of each: (a) amplexicaul, (b) perfoliate, (c) deciduous, (d) spatulate (e) ochrea.
- VII. Describe the outer morphology of the flower given you. Draw a floral diagram illustrating the arrangement of its parts.
- VIII. Define and give an example of each of the following kinds of fruits: (a) cremocarp, (b) drupe, (c) capsule, (d) lomentum (e) syconium.
- IX. What is meant by the following terms referable to flowers: (a) hermaphrodite, (b) double, (c) neutral, (d) regular, (e) choripetalous.
- X. Define the following terms referable to seed structures, and give an example of each: (a) aril, (b) raphe, (c) awn, (d) caruncle, (e) spermoderm.

#### QUESTIONS ON INNER STRUCTURE

- I. Name and describe five types of fibrovascular bundles. State the distribution of each.
- II. How is cork formed (a) in roots, (b) in stems?
- III. State the structural differences (if any) between (a) Monocotyl roots and dicotyl roots of primary growth. (b) Monocotyl stems and dicotyl stems.

- IV. Define (a) periderm, (b) pericambium, (c) phellogen, (d) phellogen, (e) periblem.
- V. Name in order, passing from periphery toward the center, the tissues seen in a dicotyl stem at the close of the first year's growth.
- VI. Wood: (a) define, (b) name the histological elements found in woods, (c) what differences, if any, are found between angiospermous and coniferous woods? (d) what is alburnum? (e) define duramen.
- VII. Make a diagrammatic sketch of each of the following types of leaf blades as seen in cross section and indicate their various parts: (a) dorsoventral, (b) bifacial, (c) centric.
- VIII. Draw an immature ovule and label all of its parts.
- IX. (a) What constitutes the male gametophyte of an angiosperm? (b) What constitutes the female gametophyte of an angiosperm?
- X. (a) Draw a diagram of a transverse section of a capsular fruit and indicate its various parts. (b) Construct two diagrams showing the structural differences between an albuminous and an exalbuminous seed.

#### **SUB-COMMITTEE ON COMMERCIAL AND LEGAL PHARMACY**

**Charles O. Lee, Chairman**

The work of the subsection, this year, was organized by mailing to the Dean of each college in the Conference a card, stamped and addressed for reply, as follows:

1. Does your school offer a course in commercial pharmacy?
  - (a) State the number of class hours devoted to the study of the subject.
  - (b) Give the name of the teacher of this subject.
2. Does your school offer a course in legal pharmacy?
  - (a) State the number of class hours devoted to the subject.
  - (b) Give the name of the teacher of this subject.

From 44 schools of the Conference addressed, replies were received from 31. Of this number 25 offer courses in commercial pharmacy ranging in number of hours from 3 to 90, and 20 offer courses in legal pharmacy ranging in number of hours from 5 to 25.

Four offer only a few special lectures and no regular course, and six report no work in this subject.

The further work of the committee this year, pertains only to the subject of commercial pharmacy. To each of the 25 teachers of commercial pharmacy, reported on the cards cited above, was sent a questionnaire. Replies were received from 15. The six questions will be submitted together with a brief summary of reports on each.

1. (a) Do you use a text in your course in commercial pharmacy?
- (b) If so, give the title and name of the author.

To this, 10 reported O'Connor's *Commercial Pharmacy* as the text; one reported Pace and Pace *Accounting and Commercial Law*; another reported *Commercial Law* by Gano; and one reported Gilman's (Lasalle University Extension Course) first 30 lessons, and three reported the use of no text and stated that the course was presented entirely by lectures.

2. (a) Do you require collateral reading on books other than the text?
- (b) If so, give titles and authors of a few of your best references.

To this question, seven stated that reading in books other than the texts was required. The following references were mentioned: *The Druggist and His Profits* by Mason, *Retail Selling and Store Management* by Nystrom, *Advertising and Selling* by Hollingforth, *Business Forms* by Pierce, *Productive Advertising* by Hess.

3. (a) Do you use in the course, commercial journals, other than pharmaceutical journals?
- (b) If so name the three best ones.

Six answered this question in the affirmative and *System* was the only publication, other than drug or chemical journals, mentioned.

4. State briefly your method of conducting this course, viz., lecture, discussion, quizzes, etc. The replies to this question indicate that the course is given generally by a combination of lectures, quizzes, discussions and reports. In two cases it was stated that daily reports are required from students, and in two other cases part of the work is of a practical nature in accounting, book-keeping and business writing. Several reported special lectures by experts in various lines of business.

5. Do you cover the subjects as outlined in the *Syllabus* for this course? Eight answered in the affirmative, the remainder stated that their courses followed the *Syllabus* only in part or in a very general way.

6. How many class hours do you spend in discussing each of the following general topics:

(1) Financing and planning a pharmacy, (2) store management, (3) store service, (4) buying goods, (5) selling goods, (6) salesmanship and fundamentals of it, (7) advertising and fundamentals of it, (8) departments of a store, (9) business building, (10) obligations to the community, (11) other topics of importance.

The object of this question was to try to learn the topics most emphasized in each school. In every case but one, however, these topics seemed to be the ones very generally discussed. A summary follows of those who reported.

<i>Schools</i>	<i>Hours spent on each topic in order named above</i>											
	Nos.	1	2	3	4	5	6	7	8	9	10	11
A .....	1	.5	.5	1	.6	.6	.6	.6	.6	.6	0	42*
B .....	5	15	20	10	25	25	0	6	0	0	0	20
C .....	1.6	1.6	2	1	2	2	1	1.6	1.6	0	0	
D .....	6	5	5	6	6	10	10	6	6	4	0	
E .....	1	4	6	5	5	5	3	2	2	1	0	
F .....	3	3	6	3	3	9	9	2	2	6	5	

\* 41 hours given to Banking, Book-keeping and Business Correspondence and one hour to inventories and insurance.

#### SUMMARY

In reviewing the work of this subsection this year, it is to be regretted that only about 35 per cent. of the schools have been heard from, but reports from this 35 per cent. furnish, doubtless, a good criterion of the work done in commercial pharmacy in our schools. Such being the case there is too great a lack of unanimity in the course as now given.

Some have complained that there is no textbook satisfactory for such a course. Certainly the one in most common use is given too much to trivial things, and nonessentials. It may be said in this connection, however, that the list of collateral books as reported on this subject is entirely too small, for there are now many well written books dealing with the fundamental problems of business, which one

could well use as a basis of such a course. Likewise there are several magazines, none of which have been mentioned, that deal with the problems of the business man, often in a very creditable way. Probably one of the best things that a course like this could do would be to acquaint the student with the best works and authorities dealing with the various problems of business.

The idea of making use of experts in various lines as special lecturers is to be highly commended in any course, and especially so in a course in commercial pharmacy. We believe this ought to be a more common practice than it seems to be at present.

Reports indicate very largely a failure to follow the outline of the *Syllabus* for this course. Whether this means that the *Syllabus* outline does not conform to the general understanding as to what the course should be, or that there are other reasons for this condition, the committee is unable to determine.

#### CONCLUSION

The work of this committee has not been extensive nor exhaustive, but difficult. A course like commercial pharmacy ought not be made an exact course. While a comparatively new course, it is entirely in keeping with courses in commerce, administration and business that many of our universities are now offering in response to a real need in the realm of business. Such courses deal not so much with business methods as with principles underlying business, commerce and trade. Surely a course in commercial pharmacy has a similarly important place in the curricula of our schools of pharmacy.

In consideration of the conditions as found by the work of this committee for the past two years, and in view of the rapid advances that are being made in commercial education in our universities, this committee desires to recommend the appointment, by the proper authority, of a committee to study and to formulate an adequate outline that will serve as a basis for a course of study in commercial pharmacy, and which will be on a par with the best single courses offered to men entering the business world, and that results of the work of such committee be reported at the 1920 session.

#### SUB-COMMITTEE ON BACTERIOLOGY AND IMMUNOLOGY

E. N. Gathercoal, Chairman

Examination questions suitable for courses in bacteriology in the second or third year's work in colleges of pharmacy and for

State Board of Pharmacy examinations for full licensing in pharmacy.

#### HISTORY

1. Who were Pasteur, Leeuwenhoek, Koch, Tyndall, Migula.
2. Give Koch's postulate and name four bacteria that conform to this law.
3. Write on the history of bacteriology giving the most important discoveries.
4. Indicate the origin and meaning of the words: animalcules; infusoria; bacteria.
5. Discuss: (a) spontaneous generation of life; (b) contagium vivum; (c) germ theory.

#### STERILIZATION AND DISINFECTION

1. Define and illustrate disinfection, antiseptis, sterilization, pasteurization, fumigation.
2. Give five methods by which formaldehyde may be generated for practical purposes.
3. Sterilization: name and describe each way in which it may be accomplished.
4. What are the most common gaseous disinfectants and how are they used?
5. What liquid disinfectants would you recommend for bedside disinfection and how should they be used (strength, method, etc.)?
6. Describe in full how a room may be disinfected. State several substances which may be used and the amounts.
7. Describe two efficient methods of sterilization (dry air and steam) giving temperature and time for each, and when each should be used.
8. Name three coal tar disinfectants and strength used. Name three metallic salts for germicides and strength used.
9. Describe in full how the Phenol Coefficient is obtained.
10. Sterilization in the Pharmacy: Name three classes of pharmaceutical preparations that should never be dispensed except in a sterile condition. Describe the best method of sterilizing: (a) bottles and glassware; (b) rubber stoppers; (c) mortar and pestle; (d) filter paper; (e) empty glass ampuls; (f) alkaloidal salts in ampuls; (g) organic salts of iron in ampuls; (h) bacterial vaccines; (i) antitoxins; (j) oils, ointments. How can a sterile hypodermic

solution of morphine sulphate be obtained without using any sterilization process?

11. What are the advantages of an autoclave as a sterilizer?
12. What are the limitations of HgCl<sub>2</sub> as a disinfectant,
13. Name three ways of sterilizing drinking water and tell why they are effective.
14. Describe most efficient method of sterilizing cotton or gauze or clothing.
15. Mention most efficient method of sterilizing (a) platinum needle in glass handle; (b) clean, empty, stoppered culture tubes; (c) water in a cotton-stoppered flask; (d) gelatine culture medium in tubes; (e) blood serum culture medium in tubes; (f) gauzes and cotton in packages; (g) antitoxins and vaccines; (h) a hypodermic solution of atropine sulphate; (i) rubber gloves; (j) the skin.

#### TECHNIQUE

1. What is meant by the term "culture media."
2. What are the general requirements of culture media.
3. Describe the preparation of plain broth for culture media.
4. Give detailed method of preparation of culture media: (a) Lactose broth, (b) Dextrose agar, (c) Litmus milk.
5. State the uses and advantages as culture media of: (a) bouillon; (b) gelatine; (c) agar; (d) potato; (e) blood serum.
6. Describe in full how agar culture medium is made. (Substances used, neutralization, filtering, tubing and sterilizing.)
7. Define and explain the value and use in bacteriology of: (a) plate culture; (b) incubation; (c) tube culture; (d) coverglass preparation; (e) fermentation-tube culture.
8. Discuss the isolation of bacteria in pure culture by the plate method of Koch.
9. Name the laboratory methods for growing anaerobes.
10. What is best method of observing living bacteria?
11. What is the object of staining bacteria?
12. Give Gram's method of staining. What is meant by "Gram-negative" and "Gram-positive?" Give examples.

#### MORPHOLOGY

1. Classify bacteria according to types, formations, relations to oxygen, location of flagella.
2. Differentiate between yeasts, molds and bacteria.

3. Discuss spore formation; number, arrangement and germination.
4. What pathogenic bacteria form spores and give morphology of each.
5. What are capsules and their object?
6. What are flagella; their function and arrangement on bacteria?
7. Classify bacteria as to shape and name the methods of reproduction giving an example of each.
8. How are bacteria measured? What are the variations in size among bacteria?

#### BACTERIAL ACTIVITIES

1. Mention the ideal conditions of temperature, light, moisture, oxygen supply and food supply essential to the optimum growth; (a) of a bacterium parasitic to man; (b) of a saprophytic anaerobe; (c) of a nitrifying bacterium.
2. What are saprophytes? Parasites? Obligatory aerobes? Faculative anaerobes? Pathogenic bacteria?
3. What are enzymes and how are they concerned in bacterial growth?
4. Distinguish between the terms fermentation and putrefaction.
5. What is meant by extracellular and intracellular bacterial toxins? Give examples of each.
6. How does light affect bacteria?
7. Discuss in detail the reason for the absence of bacteria in healthy organs and body fluids of plants and animals.
8. What is meant by maximum, minimum and optimum temperatures?
9. What is the effect of freezing on bacteria?

#### ANIMAL DEFENSES AGAINST BACTERIA INVASION

1. What is meant by infection, contagion and intoxication? Give examples of each.
2. What is meant by external defenses of the body?
3. What is meant by the terms infested, infected and infective?
4. Describe infection through alimentary tract: respiratory tract. Give examples.

5. Distinguish between infectious and contagious disease; hereditary and congenital transmission.

6. Define the following varieties of infection; primary, secondary, simple, mixed, terminal.

7. What role do insects play in the transmission of disease. Name two diseases transmitted by mosquitoes.

8. What is immunity? Distinguish natural from acquired immunity. What is the difference between active and passive immunity?

9. Mention five important conditions which may lower resistance.

10. Give methods for producing active immunity.

11. What is an antigen; an antibody? Name an antigen from an animal, a plant and a bacterium. Distinguish between anti-toxic, lytic and phagocytic immunity.

12. Outline Ehrlich's theory of immunity. How do antitoxic sera and bacterial vaccines produce immunity?

13. Discuss cause and transmission of tuberculosis; plague; typhoid fever and diphtheria.

14. Define endemic, epidemic, sporadic, pandemic. Discuss influenza pandemic.

15. Discuss in detail "individual carriers."

16. What is meant by Widal reaction?

17. Opsonic index: What is it and how is it obtained?

18. What is anaphylaxis? What theories are offered to explain anaphylaxis? Which do you prefer? Why?

19. Define antigen. Wherein does acquired immunity differ from anaphylaxis? What is complement fixation?

20. On what does the Wasserman reaction depend? Is it specific?

21. How does the Wasserman reaction differ from Noguchi's test?

#### SERA AND VACCINES

1. What is the difference between small-pox (Jannerian) vaccine and the modern bacterial vaccines or bacterins?

2. Describe the method of producing small-pox vaccine?

3. Describe how bacterins are made and standardized. Name one. What are sera-bacterins and lipo-bacterins?

4. Diphtheria antitoxin. When was it first put into general use? How is it prepared? What is the standard antitoxin unit? What is

the U. S. P. dose? Can this safely be exceeded? How does this antitoxin cure diphtheria?

5. What is an autogenous vaccine? What are its use and advantages?

6. Describe Pasteur's method of immunization against rabies and how it is used.

7. What is "protein sensitization" and what use is made of it?

#### **PATHOGENIC BACTERIA**

1. Name a disease caused by a diplococcus; staphylococcus; streptococcus; bacillus; vibrio; spirochete; trypanosome.

2. Give scientific name; portal of entry; avenue of exit; distribution in diseased body; morphological and staining characteristics of the organisms of tuberculosis; syphilis; diphtheria; typhoid.

3. Describe the organism causing gonorrhoea, its isolation and staining. How is this disease acquired? What Government efforts are being made to prevent its spread?

4. Describe diagnosis of typhoid. (a) by complement fixation, (b) by Widal test, (c) by cultural method.

5. Name several micro-organisms found chiefly in the mouth. What causes decay of the teeth? How prevented? What is tartar? Describe the proper brush and brushing of the teeth. What is Rigg's disease?

6. Compare the colon bacillus and the typhoid bacillus (morphology and culture characteristics).

7. Give the morphology and culture characteristics of the staphylococcus group.

8. How would you make a bacteriological diagnosis of diphtheria?

9. Typhoid fever: Describe the organism causing this disease; its structure and toxin; how acquired; prophylaxis; immunity; agglutination tests and results. How is the organism isolated? Describe the presumptive coli test.

10. Diphtheria: Outline the history of the organism causing this disease. How is it cultivated and stained? What is a carrier? What is the Schick test?

11. Tuberculosis: Name and describe the organism causing this disease. What is its staining peculiarity? What difficulty is experienced in the isolation in pure culture of this organism? What is

the particular value and use of tuberculin? Name three methods by which infection with this organism may be detected?

#### BACTERIA IN INDUSTRY

1. Describe in full, taking sample, cultivating and isolating of the micro-organisms in milk or water.
  2. What are the standard tests for coli in water?
  3. Name some of the organisms producing changes in milk.
- What is sterilized, pasteurized and certified milk?
4. Discuss the use of cold in food preservation.
  5. Give arguments for and against the use of chemical preservatives.
  6. Discuss the use of drying in food preservation.
  7. Why is milk responsible for more deaths than other foods?
- Discuss.
8. Classify milk from a Public Health standpoint.
  9. Name the different methods for pasteurizing milk. Describe one.
  10. What do you understand by the germicidal property of milk?
  11. Name the diseases that are commonly carried by milk.
  12. What are the characteristics of a milk borne epidemic?
  13. What are the cultural and morphological characteristics of *bacillus bulgaricum*?
  14. What part do bacteria play in agriculture: (a) in adding nitrogen through legumes to the soil? (b) in preparing manures for plant assimilation? (c) in the preparation of cheese?
  15. What is accomplished by "soil inoculation"?

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The report of the Committee on Nominations, Dr. Gregory, Chairman, was as follows:

For President—Wortley F. Rudd, Virginia.

Vice-president—Julius A. Koch, Pennsylvania.

Secretary-Treasurer—Theodore J. Bradley, Massachusetts.

Executive Committee—Henry Kraemer, Michigan, Chairman; Rufus A. Lyman, Nebraska; Charles B. Jordan, Indiana; Julius W. Sturmer, Pennsylvania.

Member of Syllabus Committee—E. Fullerton Cook, Pennsylvania.

It was voted that the nominations be closed and that the Secretary cast the ballot of the Association for the officers nominated.

The Secretary announced that he had cast one ballot for the officers nominated, and the President and other officers named above were declared duly elected for the ensuing year.

The report of the Auditing Committee was called for, and was given as follows:

Your Committee appointed to audit the accounts of the Treasurer for 1918-1919, Theodore J. Bradley, desire to state that they have gone over the account of the Treasurer and have found it correct.

Signed by the Committee, E. A. Ruddiman, L. E. Sayre and C. O. Lee.

It was voted that the report of the Auditing Committee be adopted.

It was voted that the report of the Committee for the Revision of the Constitution and By-laws be sent to the Conference schools, when ready, to be discussed and acted upon by mail, or in any other manner agreeable to the Conference.

Dr. Rusby reported for the Committee on the President's Address as follows:

Your Committee is deeply impressed by the spirit of self-sacrificing devotion that is expressed in every part of this admirable address, and we feel that those who have listened to its reading, and who may peruse it in printed form, cannot fail to be inspired with fresh enthusiasm or to be led to renewed and greater activity in the interest of the work to which the Conference stands committed.

We find nine specific recommendations in the address, concerning which we submit the following report:

#### RECOMMENDATION NO. 1

That the annual dues be increased to \$20.

This recommendation is approved.

After discussion, it was unanimously voted that the by-laws be amended to make the annual dues \$25 per year, instead of the \$20 recommended.

#### RECOMMENDATION NO. 2

That the chairman of each committee consult the Executive Committee regarding the sum necessary to pursue the work of his committee, and the Executive Committee notify each chairman what sum will be allowed for the work of his committee.

This recommendation is approved.

It was voted that this portion of the report of the Committee be adopted.

#### RECOMMENDATION NO. 3

That our Executive Committee be instructed to study this question and be given the necessary authority to make arrangements for collecting and preserving this record.

This recommendation refers to the war records of the colleges and is approved.

It was voted that this portion of the Committee's report be adopted.

#### RECOMMENDATION NO. 4

That the Conference approve and encourage such a system of exchange lectures between colleges.

This recommendation refers to a suggestion that pharmacy schools adopt the policy of other colleges in exchanging lecturers and is approved.

It was voted that this portion of the Committee's report be adopted.

#### RECOMMENDATION NO. 5

That the name of this organization be changed to The American Association of Pharmaceutical Colleges.

The Committee would like to amend this title by changing the last word to Faculties. An important objection to the word colleges in this connection is that the colleges are not members of the Conference. This is an association of faculties, of teachers. If we made the colleges members, the members of their boards of trustees would have to be represented here. We approve the recommendation if the Chair will accept our amendment.

The President: Certainly. It was the word Conference that I was objecting to.

Dr. Kremers: I am sorry that I can not quite agree either with the President or with the Committee. I do not see any harm in the word "Conference." I had hoped that we would always remain essentially a conference. I haven't looked it up in the dictionary, and I do not know its exact shade of meaning, but I do know there is a British Pharmaceutical Conference and it is an association to all intents and purposes. After using our name almost twenty years, I do not like to give it up just because some dictionary tells us we

are not exactly a conference. Many other organizations are using the word, and unless something very definite is gained by the change, I, for one, would not like to let it go.

The Secretary: We have such things as a constitution and by-laws. The latter can be changed at any meeting by a two-thirds vote of the members represented at that meeting, but the name of the organization is a part of the constitution, and the last article of the constitution provides that any proposition to alter or amend this constitution shall be made in writing to the chairman of the Executive Committee not later than forty days prior to the annual meeting of the Conference, and that a copy of such proposed change shall be mailed by the Chairman to each member of the Conference not later than thirty days prior to the annual meeting. Then, upon receiving a two-thirds vote, it shall become a part of the constitution. It is plain from this that this recommendation cannot be acted upon at this time.

Recommendation No. 5 was then withdrawn by the Chairman of the Committee.

#### RECOMMENDATION NO. 6

That a committee of five be appointed to prepare such a memorial and present it in person to the Foundation, and that the Conference pay the expenses of this committee.

This recommendation refers to the request that the Carnegie Foundation conduct an investigation of pharmacy schools. The Committee offers as an amendment to this recommendation that one member only of the committee present the memorial in person, and approves the recommendation as amended.

It was voted that this recommendation, as amended by the Committee, be adopted.

#### RECOMMENDATION NO. 7

That the Conference pledge \$1,000 towards the expense of such an investigation.

The Committee does not approve of this recommendation.

The President: I rather expected that, but, Gentlemen, I am thoroughly convinced that the best method this Conference can take to clear up the matter of pharmaceutical education is to get an investigation made. I was surprised at Dr. Koch's statement. I had understood that the Carnegie Foundation did plead lack of

funds, and if it does this Conference must help provide funds, though perhaps not a thousand dollars.

Dr. Rusby: We thought so, also, but under present conditions it seemed to us better not to approve that recommendation.

#### RECOMMENDATION NO. 8

That the Conference go to the high school requirement in the fall of 1920.

The Chairman of the Committee stated that this was recommended, but not as obligatory; that this matter had heretofore been gone over and discussed very thoroughly in the Conference, and that the year 1923 had been fixed and so reported to the trustees of the colleges; that if some faculties should go back to their trustees and report this change, they might lose the ground which they had already gained; that the Committee knew there were some schools which had complied with the obligation and some that could not comply, and the result would be that the latter would be compelled to leave the Conference; that so little would be gained by this change and so much might be lost, that the Committee recommended that the year 1923 be anticipated wherever possible, but that it should not be made obligatory.

It was voted that the report of the Committee on this recommendation be adopted.

Dr. Rusby stated that the Committee on President's Address was to report also on the report of the Committee on Higher Standards of Education, but that the only recommendation contained in their report was that the Conference require high school graduation for entrance by the year 1923, and that this recommendation was approved by the Committee.

It was voted that the report of the Committee on the report on Higher Standards of Education be adopted.

#### RECOMMENDATION NO. 9

That the Conference appoint a committee of three to be known as the Joint Committee on Prerequisite Information, to act with a similar committee of the N. A. B. P., to collect and distribute information on prerequisite legislation to all state associations or other organizations that request it, and to recommend lecturers on prerequisite legislation to all state associations that request assistance.

This recommendation is approved.

It was voted that this portion of the Committee's report be adopted.

It was voted that the report of the Committee on President's Address as a whole be adopted.

The Committee on Salaries reported as follows, Dr. Rusby reporting:

This Committee found that it would be very difficult for some schools to increase their income, because that income was fixed by statutes, being a certain number of mills of the state taxes. It was nevertheless believed that it might be possible for university schools to succeed in getting increased appropriations. Therefore we make the following recommendation: First, that the Executive Committee of the Conference send a copy of Dr. Rusby's paper to the executive head of each school of the Conference, with a letter urging that such increases in income be sought, as shall provide for increases in the salaries of faculty members amounting to 50 per cent. more than those paid in 1918-1919. We put it that way because some schools have already made material increases for the coming year. Second, that a similar action be taken in regard to schools that are not members of the Conference.

Dr. Kraemer: Ought not those communications to be sent to the Deans of the department? I, for one, would not care for that paper to be sent to the Board of Regents of the University of Michigan, because we are very well satisfied in our institution, and some explanation should be made to the Board of Regents before presenting that paper. Ought not this paper to be sent upon consultation with the Deans?

Dr. Rusby: I think that is a point very well taken. We hesitated over that, and finally thought it was better to address the executive heads directly. This suggestion ought to be carefully considered.

Dr. Lyman: I should like to second Dr. Kraemer's objection. If that should go to the Chancellor of our University, he would think we had gone down to New York and put up a job there to have the Conference write back to university authorities. I think it should be sent to us to present to the head of the school in the way we think wise.

Dr. Kraemer: It would be very bad policy to send such a communication to the governing body without the Dean knowing about it.

It was voted that the communication referred to be sent to Deans of the colleges for transmission to the executive heads, if advisable.

The Secretary: On the recommendation of the President as approved by the Committee on his address, we have voted to increase our annual dues to \$25. In doing that, I think we ought to give some consideration to the unreasonable entrance fee charged in the Conference. I know some of you do not think it is unreasonable, but I know there are colleges kept out of the Conference by the size of the fee. If it was so fixed for the purpose of producing income, it was a mistake, for it comes in but once. We have now provided for a larger income, and I think it would be desirable to cut down the \$60 entrance fee that we now require. So I make a motion that the entrance fee be fixed at \$25.00.

Dr. Kraemer: I should like to make a substitute or amendment motion to that, that this matter be recommended and referred to the Executive Committee to pass on next year.

The Secretary: Is there any reason for postponing an important matter for a full year?

Dr. Koch: The school at Boulder, Colorado, part of the University of Colorado, applied for entrance to the Conference last year, but did not enter on account of the initiation fee being exorbitant.

Substitute motion withdrawn and it was unanimously voted to amend the by-laws, to make the initiation fee \$25, instead of \$60.

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The Conference then went into Executive Session at which applications for membership were discussed, also an invitation received for the Conference to be represented in the National Drug Trade Conference and to send delegates to its meetings. It was voted that this invitation be accepted and that the expenses of three delegates, to be appointed by the President, be paid.

Adjourned.



prior to the passage of the Missouri Law in 1879. He was active in St. Louis pharmaceutical organizations and president of the Cinchona Club at the time of his death.

As a St. Louis retail druggist from July, 1868, to May, 1919, he held the confidence and esteem of the medical profession and of his customers. His clerks always spoke of him in complimentary terms, and the Good Pharmacy was well supplied with help.

Professor Good was born in the eastern part of Pennsylvania on January 12, 1842. He started life as a farmer and received his education in the local schools. He taught school for a few years before going to Philadelphia in 1865, where he completed the junior course in the Philadelphia College of Pharmacy, during the session of 1867-8. He went directly to St. Louis from Philadelphia.

Professor Good was dean of the faculty of the St. Louis College of Pharmacy from 1877 to 1903. He received the honorary degree of M.D. from the Missouri Medical College and also the honorary degree of Ph.M. from the Philadelphia College of Pharmacy. These notes just touch briefly upon the pharmaceutical activities of a man whose every act rang true to the interests of his calling.

Professor Good was a Quaker, but finding no Quaker Church in St. Louis, he affiliated with the Unitarian Church, where he served as treasurer for many years. His mode of life was careful and prudent. His moral sentiment was always prominent.

The pall-bearers at his funeral were teachers and officers of the St. Louis College of Pharmacy, together with former clerks in the Good Pharmacy. The body was cremated.

Mrs. Good died a few years ago and the professor is survived by a sister and a daughter.

## CONSTITUTION

**Article 1.** This body shall be known as the American Conference of Pharmaceutical Faculties.

**Article 2.** The object of this Conference shall be to promote the interests of pharmaceutical education.

**Article 3.** This Conference shall consist of the pharmaceutical faculties represented by delegates at the meeting held at Richmond, Va., in May, 1900, and of such other faculties as shall hereafter be elected to membership. Provided, however, that the membership of the faculties represented at the meeting of 1900 shall be subject to ratification at the meeting of 1901 by the same vote as is required for the election of new members.

**Article 4.** Pharmaceutical faculties not members may, after recommendation of the Executive Committee, be elected to membership by a vote of two-thirds of the members of the Conference.

If a majority of the members present at any meeting of the Conference shall vote in favor of a candidate's admission, but the affirmative votes shall number less than two-thirds of the total membership, the votes of members not represented at said meeting shall be taken by mail.

**Article 5.** Each faculty shall be entitled to one vote in the proceedings of this Conference, but all the properly accredited delegates of any faculty shall have the right to engage in debate upon any question.

**Article 6.** Representatives from ten of the faculties who are members of this Conference shall be necessary to constitute a quorum.

**Article 7.** The officers of the Conference shall consist of a President, Vice-President and a Secretary-Treasurer, all of whom shall be elected by ballot, and shall hold their respective offices for one year or until their successors are elected and qualified.

The President, or in his absence the Vice-President, shall preside at all meetings of the Conference, shall present an annual address, shall appoint committees and shall perform such other duties as pertain to the office of President.

**Article 8.** The Executive Committee shall consist of the President and Secretary-Treasurer as ex-officio members and five legally accredited delegates elected by ballot. At the first election three members of the Executive Committee shall be elected to serve for one year and two for two years. At all subsequent elections members of the Committee shall be elected to serve for two years. The Chairman of the Executive Committee shall be designated by the ballot of the Conference, and shall hold office for one year.

**Article 9.** The Conference shall hold one meeting annually at the same place and coincident with the annual meeting of the American Pharmaceutical Association, the time to be arranged by the Executive

Committee of this Conference, after consultation with the council of the said Association.

Article 10. Any question or business may be submitted through the Executive Committee to a vote of the Conference by mail during the interim between meetings.

Article 11. Any proposition to alter or amend this constitution shall be submitted in writing to the Chairman of the Executive Committee not later than forty days prior to the annual meeting of the Conference and a copy of such proposed alteration or amendment shall be mailed by the Chairman to each member of the Conference not later than thirty days prior to the said annual meeting. Such alteration or amendment shall, upon receiving a two-thirds vote of the membership, become a part of this constitution.

Should such amendment receive affirmative vote of a majority of the members represented at any meeting, but less than two-thirds of the total membership, the votes of the members not represented at said meeting may be taken by mail.

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## BY-LAWS

1. The Executive Committee shall make all necessary arrangements for the annual meeting of the Conference, and shall, not later than thirty days prior to the date thereof, mail to each member a written program of the papers to be presented and of the subjects proposed for discussion at such meeting.

It shall also be the duty of the Executive Committee to investigate the educational facilities of all schools of pharmacy in the United States; such investigation to include the collection and tabulation of data concerning the entrance requirement, curriculum and the qualifications of the teaching force of each school.

It shall furthermore be the duty of the Executive Committee to submit annually, to the Conference, a list of all schools of pharmacy in the United States, which based on the investigation above, appear eligible for membership.

If, from investigation of the Executive Committee, it appears that any institution represented in the Conference does not comply with the requirement for membership in the Conference, it shall be the duty of the Executive Committee to submit to such institution its findings, at least ninety days previous to the annual meeting, and it shall report the same to the Conference at the annual meeting.

The credentials of delegates shall be examined by the Executive Committee previous to the meeting of the Conference.

The program submitted by the Executive Committee shall be subject to the approval of the Conference.

2. The Committee on Pharmaceutical Syllabus shall consist of seven members elected by ballot, as follows: one member shall be elected for

seven years, one for six, five, four, three, two and one years, respectively; each vacancy occurring from the expiration of term shall be filled for a term of seven years; other vacancies, if occurring in the interval between annual meetings, shall be filled by appointment by the President, such appointee holding office until the next annual meeting, when the vacancy shall be permanently filled by election. This committee shall be members of the National Committee on Pharmaceutical Syllabus and shall report to the Conference annually, or as occasion demands.

The proportionate share of current expenses, not to exceed twenty-five dollars per annum, of the National Committee on Pharmaceutical Syllabus shall be paid by the Treasurer on warrant of the President.

3. The faculties holding membership in this Conference shall pay an initiation fee of \$25.00 and an annual fee of \$25.00. No faculty shall be considered to be in good standing or entitled to vote unless all dues are paid.

4. All disbursements of money shall be upon the written order of the Chairman of the Executive Committee, and an itemized account of all receipts and disbursements shall be presented at each annual meeting of the Conference.

5. Upon receipt of an application from any faculty to be admitted to membership in this Conference, the Executive Committee shall submit to such faculty a schedule of questions touching the qualifications of the school or college and shall report the result of its investigations, with recommendations to the next succeeding meeting of the Conference.

6. All proceeding and discussions as to the standing and qualifications of schools and colleges, or of the eligibility of faculties to membership in this Conference, shall be conducted in executive session.

7. *Qualifications for Admission to and Membership in the American Conference of Pharmaceutical Faculties.*

(1) The institution shall be incorporated as a college or school of pharmacy, or be a department of a regularly incorporated state educational institution, or a department of a state university, or conducted by an incorporated pharmaceutical society.

(2) The school or college shall have been in continuous operation for at least five years prior to the date of application for membership in the Conference.

(3) The institution shall include in its course of instruction, oral lectures, personal laboratory work, recitations and reviews. This shall exclude work *in absentia*.

(4) The institution shall require of each candidate for graduation not less than 1,200 hours of instruction, of which at least 500 hours shall consist of lectures and recitations. Such work to be given in a period of not less than fifty weeks, occupying not less than two full college years, and at least two months should elapse between these two years.

(5) The requirements for admission of students to the school or college as candidates for any degree shall be:

**First**—A minimum age of seventeen years, except when the candidate is a graduate of an accredited high school or of an institution of equal grade, in which case no age limit shall be demanded.

**Second**—Evidences of the satisfactory completion of education beyond the eighth grade equivalent to 15 counts shall be required of each student. A count shall consist of one hour instruction per week for a school year of 36 weeks. These counts to be distributed among the following subjects:

English at least 4 counts required. The remaining counts to be distributed among the following subjects: language other than English, algebra, science, general history, commercial geography, bookkeeping.

**NOTE**—At the meeting held in Philadelphia in 1916, the Conference adopted a recommendation to its members that, after July 1, 1918, the completion of two years of high school work be required for entrance to the course leading to the degree of Graduate in Pharmacy.

**Third**—Certification as to these entrance requirements of all students must be completed within sixty days of the opening of the school term, and students shall be admitted to courses leading to degrees only during the first thirty days of each session.

(6) It shall be the duty of each institution holding membership in this Conference to prepare each year before April 1st a complete list of the students enrolled since the last report, showing for each case the character and extent of the credentials for entrance, the conditions, if any, entered against the student, and the standing accorded them. Such reports shall be certified to by the proper officers of the institution concerned, seal attached, and shall be forwarded to the chairman of the Executive Committee, who shall examine them carefully and report to the Conference at the next annual meeting any irregularity, or evidence that the spirit and letter of the Conference standards are being violated. The failure of any member to comply with this requirement shall be published in the *Proceedings* and if the offending member fails to meet this requirement after due notification for two consecutive years, it shall be subject to expulsion from the Conference. Said member may be reinstated by a two-thirds vote of the entire Conference upon the recommendation of the President and the chairman of the Executive Committee.

## 8. ORDER OF BUSINESS

1. Roll Call.
2. President's Address.
3. Report of Secretary-Treasurer.
4. Reports of Standing Committees.
5. Reports of Special Committees.
6. Unfinished Business.
7. Miscellaneous.
8. Election of Officers and Members of the Executive Committee.
9. New Business.

**10. Election of New Members and Executive Session.**

**11. Adjournment.**

9. Any institution belonging to the Conference may have charges brought against it for failure to comply in a satisfactory manner with the "Qualifications for Admission to and Membership in the American Conference of Pharmaceutical Faculties." Such charges must be made in writing and filed with the Chairman of the Executive Committee at least ninety days previous to an annual meeting of the Conference. Immediately after the filing of charges the Chairman of the Executive Committee shall furnish the institution against which the charges are made, and also each member of the Executive Committee, a copy of the charges. The institution against which the charges have been preferred shall be given a hearing at the time of the annual meeting of the Conference. The evidence presented to the Executive Committee and their conclusions upon the same shall be presented to the Conference for final consideration. If the charges shall be sustained by a two-thirds vote of the members of the Conference, said institution shall be reprimanded, fined, suspended from the privileges of membership, or expelled from membership, as may be determined by a two-thirds vote of the Conference; but no fine shall be for a greater amount than \$50.00, nor shall suspension from membership be for a longer period than one year from the date of such sentence.

10. Any institution holding membership in the Conference shall have the right of withdrawal by giving written notification to the Secretary of the Conference at an annual meeting and the paying of all dues which such institution may be owing to the Conference.

11. These by-laws may be altered, added to, or suspended at any regular meeting by a two-thirds vote of the members represented at such meeting.

The following resolutions were adopted at Nashville, Aug. 1913:

For the degree of Graduate in Pharmacy, a minimum course of 1200 hours, as approved by this Conference, shall be required.

That so far as pharmaceutical degrees are concerned, an hour's laboratory work, performed under the immediate direction and oversight of an instructor, shall count as the equivalent of an hour of lecture or recitation.

The Conference recommends to its members that the minimum requirement for admission for all degrees, except Ph.G., shall be the successful completion of a four years' high school course, or its equivalent.

**12. APPLICATIONS FOR MEMBERSHIP**

(1) Applicants for admission shall furnish a statement of qualifications of the members of the faculty, and of the equipment of the institution.

(2) The application for membership in the Conference shall be signed by the dean of the faculty and the president of the school, both of whom shall make affidavit of the same, and it shall bear the seal of the institution.

(3) If the information furnished by the applicant shall not be regarded as sufficient, the Chairman of the Executive Committee shall, at the request of the applicant, appoint a Committee on Visitation, consisting of three representatives of the Conference, who shall visit the institution during a regular session at the expense of such institution and report their findings to the Chairman of the Executive Committee.

The statement required of any candidate for admission to the Conference must be made in accordance with the following numbered heads. All answers should be direct and clear.

By order of the Conference, the Executive Committee is required to verify the statements made, if in its judgment necessary, or it may ask for further information.

1. Name or title by which the school or college is commonly known.
2. Location.
3. Date of organization.
4. Is the above named school or college itself a degree-conferring institution? If not, what is the name or title of the institution conferring degrees and what relation does the school sustain to the degree-conferring body?
5. Is the school or college governed by a board of trustees, directors or agents, or by what other governing body is it managed? By whom and for what reason are the members of the governing body elected or appointed?
6. In what person or persons does the paramount executive authority of conducting the institution rest?
7. Is the institution as a whole or any material part of its equipment the individual property in whole or in part of any person or persons exercising executive authority in its conduct? Or, is it owned by a firm or stock company, or partnership concern?
8. Is any pecuniary profit derived by the owner or owners or the managers from the operation of the institution?
9. State as nearly as possible the total value of grounds, buildings and equipment exclusively devoted to pharmaceutical instruction.
10. If the school does not own grounds or buildings, what is the actual value of furniture, fixtures, apparatus, materials, books and museum used for pharmaceutical courses?
11. Enumerate the several different laboratories at the disposal of the school or college and state for what purpose each is used.
12. For how many hours each week, between 8 A. M. and 6 P. M., is each of these laboratories at the disposal of the school of pharmacy for the use of its students.

13. How is the school supported? Are all the expenses of the school paid mainly or exclusively out of the actual income from the tuition and other fees or charges paid by the students, or is it supported to a material extent by endowment or appropriations?
14. State the number of professors giving instruction to pharmaceutical students in the subjects belonging to the obligatory curriculum.
15. Give the number of assistants similarly employed.
16. By whom are the professors and other members of the teaching staff appointed or employed?
17. Give the name, age, academic history, college degrees, and also briefly the professional career or service of each of the professors.
18. Are the teachers, or any one of them, individual owners, in whole or in part, of the institution's stock or equipment?
19. How many students were in actual attendance during the twelve months immediately preceding the date of this report and what was the largest number in concurrent attendance during any part of that twelve months?
20. Give the regular date or dates upon which students may enter the course of study.
21. What are the entrance requirements prescribed and enforced?
22. State briefly what studies are embraced in the obligatory curriculum.
23. Which of these subjects must be completed in the first term or semester, or before the work of the second term can be taken up?
24. What is the length in weeks of each term or semester?
25. How many terms are given annually?
26. How many such terms are required for each degree given?
27. What is the total number of lecture hours which each student is obliged to attend during each term or semester? State the number of hours devoted to each subject.
28. State the number of hours in the laboratories which each student is obliged to attend each term or semester. How many hours are devoted to each subject?
29. Can any portion of the obligatory course be taken without resident attendance, and if so, what portion or portions, and in what manner?
30. Is any student exempt from any portion of the work embraced in the curriculum of the laboratory work? If so, in what manner and on what conditions is such exemption granted?
31. Is any of the obligatory instruction given at night, and if so, how much of it?
32. What degrees in pharmacy are conferred and what are the specific requirements for each degree?
33. Is the vote of the majority of the faculty required in every instance before a degree is conferred by this institution?
34. What was the number of graduates included in the last graduating class?
35. What is the annual date of graduation?

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